

# Integration in the Labour Market

Employment and Earnings among  
Descendants of Immigrants in Norway



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## **Abstract**

Norway has been an immigrant country since the late 1960s and minority integration has since been a recurrent source of newspaper headlines and political debate. Now - nearly 50 years later - Norway is hosting a substantial immigrant population, and face the critical challenge of integrating their children. The economic sustainability of the welfare state could in part depend on the effective integration of descendants of immigrants to the point that they can participate in the labour force on par with native majority persons. At the start of 2013, this group consisted of over 117,000 persons, a majority of which still under the age of 20 years. Thus, in the next few years, a high number of Norwegian-born children of immigrants will seek to gain access to the labour market.

To assess the labour market integration of this group, I ask two questions. One, what is their employment probability the year after graduation, and second; what are their earnings after gaining employment? Their labour market outcomes are contrasted with the results of the native majority population. In the analyses, I investigate whether there are different outcomes within specific educational fields. Due to low observation numbers within the specific fields, I choose to group descendants of immigrants into two categories; OECD and non-OECD, based on the country their

parents emigrated from. To answer the research questions, I use the statistical tools multivariate binary logistic regression and multivariate linear regression.

The administrative registers used in the analyses are gathered by the research project DISCRIM: Measuring and Explaining discrimination in the labour market. The information in the data set stretches from the start of 2000 until the end of 2010. The data set contains information about all persons born between 1965 and 1989 who graduated from a higher education institution registered in Norway between 2000 and 2009, and who either have two foreign-born parents or two Norwegian-born parents (N=229 147).

I report the results of two sets of analyses. To avoid conflating gender effect with national ancestry effect, I conduct separate analyses for men and women. I find that descendants of immigrants have lower probabilities to gain employment the year after graduation compared to native majority persons. The models include control for age at graduation and time of graduation. The results are statistically significant both before and after adding fixed effects of narrow education fields in the models. However, the interaction terms between national ancestry and the education fields Business, Engineer, Nursing and Medicine are not significant.

In the second set of the analyses, I analyse earnings. I find a bipolar pattern divided along gender. Once employed, there are generally no earnings disparity between female descendants of non-OECD immigrants and native majority women. However, within the groups of Business and Engineer graduates, female descendants of non-OECD immigrants earn significantly less than majority women. Furthermore, I find some small earnings disadvantages for female descendants of OECD immigrants.

For men, there are no disadvantages for descendants of non-OECD immigrants, whereas there are small, but significant, earnings advantages for descendants of OECD immigrants compared to the native majority. Furthermore, within the groups of Business and Engineer graduates, I find significant earnings advantages for male descendants of non-OECD immigrants, compared to native majority men.

The results of this study indicate that the largest disadvantage for descendants of immigrants occurs in the entrance to the labour market. The study corroborates earlier findings in Norway. Within the international literature, the Norwegian pattern resembles the findings in Great Britain and Sweden, as well as traditional immigration countries like Australia, Canada and USA. The labour market disadvantage for descendants of immigrants is mainly in the entrance to the labour market, but when successfully employed, they receive similar returns as their native majority peers.



## My thanks

*‘From quiet homes and first beginning,  
Out to the undiscovered ends,  
There’s nothing worth the wear of winning,  
But laughter and the love of friends.’*  
- Hilaire Belloc

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# **1**

## **Introduction**

Since the turn of the century, minority integration has regularly been the cause of newspaper headlines and political debate in most European countries (Parson and Smeeding 2006). In the Netherlands, high crime and school drop out rates, especially among descendants of Moroccan immigrants, have resulted in arguments about the failure of the multicultural society. A similar debate has sprung up in Germany, where almost two million Turks live in a parallel world detached from the wider German society. Meanwhile, in France, riots, mostly involving descendants of Algerian and Moroccan immigrants, have abruptly put the Republican assimilationist model into deep crisis, and in the UK, British born descendants of Pakistani immigrants shocked the public by being involved in terrorist acts in their country of birth (Thomson and Crul 2007).



This thesis is an examination of the relative labour market outcomes of descendants of immigrants<sup>1</sup> with higher education compared to their native majority peers. The outcomes I will investigate are their probability of being successfully employed the year after graduation, and their earnings after employment. The setting is a Norwegian welfare model that is characterized by an emphasis on full-time employment, a relatively even income distribution and an emphasis on gender equality (Fangen and Mohn 2010; Barth and Moene 2008; Esping-Andersen 1999).

An important integration goal is participation in the labour market, and many social policies are directed towards getting minorities in full-time employment. However, a substantial body of research has discovered and documented higher unemployment probability, higher frequency of overqualification, and lower earnings for immigrants compared to native majority persons (e.g. Drange 2013; Barth, Bratsberg and Raaum 2011; Enes and Kalcic 2010; Olsen 2010; Støren 2010; Villund 2010; Støren, Opheim and Helland 2009; Aas 2009; Brekke and Mastekaasa 2008; Birkelund, Mastekaasa and Zorlu 2008; Villund 2008; Brekke 2007a; Brekke 2007b; Bratsberg, Barth and Raaum 2006; Galloway 2006; Helland and Støren 2006; Wiborg 2006; Djuve 2005; Støren 2005; Støren 2004; Barth, Bratsberg and Raaum 2004; Longva and Raaum 2003; Barth and Raaum 2002; Hansen 2000).

One of the explanations of these pervasive findings has been that immigrants lack the ‘country specific’ human capital which is critical to succeed in the receiving country’s labour market (Chiswick 1978). Country specific human capital includes knowledge about the destination country’s language, customs and labour market, and is only to a limited extent transferable between countries. Other proposed explanations have been that the process of immigration itself is disruptive, and that the possession of foreign educational credentials and foreign work experience makes it hard for employers to assess the quality of the immigrant employee (Heath, Rethon and Kilpi 2008).

Descendants of immigrants, however, are a group that has been born and raised in Norway, and their achievements have been branded the “litmus test of integration” (Henriksen and Østby 2007). At the start of 2013, this group consisted of over 117 000

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<sup>1</sup> Descendants of immigrants are also called second-generation immigrants, or first generation Norwegians. The category refers to persons born in Norway with two foreign born parents.

persons, a majority of which is still under the age of 20 years (Daugstad 2009). Looking to the future, the opportunities and outcomes of this group may be of greater importance than the prospects of first-generation immigrants. Because of society's dependency on young people to sustain economic, cultural and social vitality, to integrate descendants of immigrants to the point that they can participate in the labour force and other institution on par with native majority persons is of crucial importance (Alba, Sloan and Sperling 2011). One motivation behind the analyses is therefore to give insight into the long-term consequences of immigration. Immigrants were born in a foreign country, sometimes in a very different culture, whereas their children were born in Norway, went to Norwegian schools, and speak the language fluently. We will therefore expect the disadvantages experienced by the immigrant population to be reduced in the next generation.

## **1.1 Research questions**

My study is a comparative analysis between the labour market outcomes of descendants of immigrants and the native majority population. The fundamental question is whether there is a pattern of labour market difference between the two groups. The disappearance or nonexistence of this labour market difference is called 'assimilation' (Nielsen, Rosholm, Smith and Husted 2004). Assimilation means that the labour market returns are the same for people of all national ancestries who share the same relevant personal attributes. The assimilation idea has been heavily criticized in the past (e.g. Alba and Nee 1997). In this study, however, I use the term strictly to mean equal outcomes to equal observed credentials in the labour market. Assimilation and integration in the labour market are two interrelated and overlapping concepts, and I will use both in my discussion of labour market outcomes.

The strategy of my thesis is to compare persons with similar qualifications and personal characteristics but with different national ancestry to see whether there exists a between-group difference unaccounted for. No such between-group difference gives support to the assimilation hypothesis, while the opposite, a persistent difference, contradicts the hypothesis. Nielsen, Rosholm, Smith and Husted (2004) propose a decomposition analysis which combines the discrimination literature and the assimilation literature. Ethnic differences after controlling for qualifications is attributed to discrimination, while no differences are attributed to assimilation. As I will discuss later, this conclusion dichotomy contains methodological complications.

The study of inequality has long played an important part in sociological research. Themes like social mobility, social stratification, class and status are pervasive in much sociological theory and empirical investigations. Weber's term 'life chances' means differences in opportunities, life styles and general prospects (Bottero 2010: 38), and in turn, life chances are influenced by labour market position, like labour market attachment, occupation and earnings.

“Stratification is concerned with how some have more freedom and choice than others. Money, power or influence give those who possess them greater control over external forces which affects us all, and open doors that might otherwise be closed. The point of stratification analysis is to see how such inequalities persist and endure - over lifetimes and between generations” (Bottero: 3).

Previous research has shown the pervasiveness of immigrant disadvantage in the Norwegian labour market. Studying the labour market outcomes of their children, then, is a study of the intergenerational transmission of these disadvantages. I will not include social mobility to the analyses, for reasons I will come back to later, but it is of value to view the results in the overarching generational context.

The effects and non-effects I have found, for example of national ancestry, are average group effects, and it is important that they are interpreted as such. The variables included in the models can influence persons within a group differently, but the coefficients reveal which direction the group is affected compared to a reference category. There may be substantial variance in individual outcomes within the groups, however, what I will investigate in this thesis is the mean average group outcomes.

The data used in the analyses are gathered by the research project DISCRIM: Measuring and Explaining discrimination in the labour market. The information in the data set stretches from the start of 2000 until the end of 2010. The data set contains information about persons with either two foreign born parents or two Norwegian born parents. Furthermore, only persons born between 1965 and 1989 and who graduated from a higher education institution registered in Norway between 2000 and 2009 are included.

Since labour market outcomes are often affected by gender, the analyses are done separately for men and women. Even within the majority group, the process of labour market outcomes could work differently for men and women (Heath and Cheung 2007a: 30). Using the gender separation strategy has the advantage that it avoids conflating gender effect with minority effect. I can

therefore avoid having to use numerous interaction variables between gender and the other important explanatory variables (e.g. minority status and education).

My first research question, which I will attend to in Chapter 6 is:

1. Transition from graduation to employment: Do descendants of immigrants with higher education experience equal employment probabilities as majority peers with the same educational qualifications?

The second research question which is answered in Chapter 7 is:

2. Earnings: If employed, do descendants of immigrants with higher education experience equal earnings as majority peers with the same educational qualifications and work experience?

Although the thesis contains discussions about the causes of labour market inequality, the research questions are originating in their nature. They belong to an important class of questions which calls for the discovery of a particular body of social fact (Merton 1965). Before a social fact can be explained, it must be discovered and established, and ensured that it indeed is a fact. The primary motive for this thesis is therefore to explore labour market patterns. While holding variables like educational qualifications, job experience, age, year of graduation constant, do descendants of immigrants still achieve different labour market outcomes than native majority persons? The secondary motive is, then, to discuss the established facts while considering previous research and relevant theoretical perspectives.

The two research questions are best seen in context with each other. First, I investigate the probability of being employed after graduation. Second, I explore the career that comes after employment. Accordingly, the second analysis is a continuation of the first, exploring what happens after the individuals in the data set get employed. Also, the first analysis provides vital information to the latter. The second analysis only explores the earnings of persons who managed to secure employment, and is thus vulnerable of selection bias. The first analysis, however, reveals the persons that secures employment.<sup>2</sup> In short, selection bias, which is further discussed in Chapter 4,

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<sup>2</sup> However, as will be explained later, the first and the second set of analyses do not use the same measure for employment.

can cause differences in the characteristics of the groups I'm studying that may affect the outcome. As an example, imagine that while all native majority persons were employed, only the best qualified descendants of immigrants were employed. This selection into the labour market would then create an association between skill and national ancestry, and we would expect descendants of immigrants in the labour market to outperform the native majority.<sup>3</sup>

In the terminology of some inequality research, notably Heath and Cheung (2007b), difference between ethnic groups are called gross disadvantage, while the difference we find after controlling for human capital and other individual characteristics is called ethnic penalties. Heath and Cheung's perspective is that ethnic penalties tell us something about equality of opportunity in the labour market. Although finding ethnic differences without control variables may be important in its own right, it may be misleading without taking qualifications into account (Heath and Cheung 2007a: 24). As an illustration, imagine one group having higher earnings than another group, this picture could be misleading without adding that the first group has higher education.

I will test the impact of national ancestry and human capital on outcomes. In the first analytic model I will investigate overall group difference between the majority population and descendants of immigrants with higher education, in the second and third model I will compare groups with the same field of education (detailed categories of higher education), and explore whether descendants of immigrants achieve the same employment probabilities and earnings trajectories as their native majority peers. The analyses provide me, thus, with two types of figures: the gross and net between-group difference. The gross difference tells the story of different outcomes in the labour market before controlling for qualifications, such as education and job experience. The net difference tells the story of different outcomes provided the same education and job experience.

The motive behind the focus on different educational fields is closely linked to the relationship between demand and supply in the labour market. The extent a personal investment in education pays off depends on whether there is demand for the skills the individual has obtained, and how much the market is willing to pay for that competence. The probability of gaining employment - and relevant employment<sup>4</sup> - is affected by educational choices within higher education (Arnesen, Støren and Wiers-Jenssen 2012; Støren and Arnesen 2011; Arnesen 2010). This illustrates how unequal distribution horizontally in higher education between groups may affect

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<sup>3</sup> Since only the best of the descendants of immigrants were hired, they could outperform native majority persons because they would have a higher average skill level.

<sup>4</sup> A relevant job means that the job match both level and field of education.

labour market outcomes.<sup>5</sup> If one group is highly represented in an educational field with great demand and a great willingness to pay high wages in the labour market, the group will have a relative advantage compared to a group with less representation. Hence, there could be gross differences without there being any net differences.

I will use the rest of the chapter to discuss some important questions and clarify some points. I will first discuss the many faces of equality of opportunity and where my thesis fits in the discussion. Next, national ancestry and the art of creating meaningful groups are discussed. I will then go on to discuss the causes of inequality and some of the limitations of my research. In the last two sections I will briefly present Norway's recent immigration history and give an outline of the chapters of the rest of the thesis.

## **1.2 The many faces of equality of opportunity**

Within the sociological inequality research, an important term has been 'equality of opportunity.' The term, however, has more than one interpretation. The notion of equality of opportunity referred initially to the absence of legal barriers that prevented some groups from obtaining governmental employment (Heath and Cheung 2007a). For some, the notion also includes the absence of de facto barriers, like lack of resources to attain education, along with de jure barriers. An even broader interpretation of the notion of equality of opportunity includes the absence of all inequality of outcomes.

The term 'meritocracy' was coined by Michael Young (1958) in his dystopian sociological fantasy novel "The Rise of the Meritocracy." The novel describes a society in which "the positions of responsibility in the service of the state, both civil and military, should be allocated on the basis of demonstrated competence rather than through nepotism, patronage, bribery or purchase" (Goldthorpe 1996)<sup>6</sup>. In Young's meritocracy, merit is defined as IQ plus effort. Although the term 'meritocracy' originally was used in a pejorative sense, the notion has a positive appeal today, and represents an "ideal against which we measure the justice of our institutions" (Allen 2011).

The notions of equality of opportunity and meritocracy are principles of fairness. So far as economic inequality is concerned, few today would argue that fairness demands complete equality of income and wealth. The ideal of meritocracy does not entail equality of income, but that the

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<sup>5</sup> See also Barth, Bratsberg and Raaum (2004).

<sup>6</sup> Summed up in Napoleon Bonaparte's expression "la carrière ouverte aux talents" (careers open to the talented).

distribution of economic goods should reflect the productive talents and efforts of the individual.<sup>7</sup> It has been argued that meritocracy attracts us because it seems both efficient and just. Meritocracy is efficient because it secures that society's important positions are filled by the most capable applicants. Furthermore, meritocracy corresponds to most people's sense of justice. Typically, we say that the most qualified candidate deserves the job (White 2007). Moreover, different returns in the labour market deriving from different qualifications may be justified to counter the problem of *concealment*: the principle that it is necessary with incentives to encourage the citizens of the society to use their talents (Marshall, Swift and Roberts 1997). Hence, there need to be an additional motivation factor to recruit skillful individuals to society's demanding and important occupations.

There has been proposed to be two kinds of meritocracy; the weak and the strong (White 2007). Weak meritocracy focuses primarily on one specific source of disadvantage: discrimination. The weak meritocracy is thus understood to be the absence of discrimination in the access to goods such as education and employment. The strong meritocracy carries an extra structural dimension. In a society without any discrimination and where the highest achieving individual gets employed regardless of rank, ethnicity and gender, background inequalities, such as economic inheritance, entails that some are seriously disadvantaged in the competition of acquiring those relevant skills. Thus, a weak meritocracy has no real equality of opportunity, because stratification allows some people *better* opportunity to cultivate their talents than others.

However, the fairness of the meritocratic principle has been criticized. Some hold that since hereditary abilities are beyond people's control, it is unfair to reward a person born with these abilities (Rawls 2005; Swift 2004; Marshall, Swift and Roberts 1997, Durkheim 1957).<sup>8</sup> They contend that it is unfair that parental social position affects the opportunities of the children, but that it is no less unfair if that inequality is caused by the child's natural ability.

Within this dialogue, the foundation of my thesis falls close to the weak meritocracy side. The objective of the thesis is to analyze between-group differences in labour market returns to qualifications. The mechanisms behind attaining skills and qualifications and whether there are

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<sup>7</sup> Thomas Paine (1999: 41) on the arbitrary nature of rank and titles pervasive in pre-revolutionary France: "the patriots of France have discovered in good time, that rank and dignity in society must take new ground. The old one has fallen through. It must now take the substantial ground of character, instead of the chimerical ground of titles; and they have brought their titles to the altar, and made of them a burnt-offering to Reason."

<sup>8</sup> Durkheim (1992: 220) argued: "To us it does not seem equitable that a man should be better treated as a social being because he was born of parentage that is rich or of high rank. But is it any more equitable that he should be better treated because he was born of a father of higher intelligence?" while John Rawls (2005: 74) echoed: "there is no more reason to permit the distribution of income and wealth to be settled by the distribution of natural assets than by historical and social fortune."

barriers into education are questions outside the reach of the analyses. The study takes pre-market factors such as education as a start off point, not a point of investigation in itself. I can therefore not determine whether the human capital achievements were influenced by fortunate social origin, genetic attributes or exclusively hard work. However, my thesis could test the weak meritocracy hypothesis, using human capital as credentials and attributing the credentials to the meritocratic corner stones: skill and labour. Thus, an underlying question of the thesis is: Are descendants of immigrants rewarded by (observed) merit on par with native majority persons in the Norwegian labour market?

### 1.3 National ancestry

A few problems of categorizations commonly used in immigration research have been raised. These are the problems of terminology and labeling. First, it has been common, both in international research and in everyday conversation, to call children of immigrants who are born in the recipient country for “second-generation immigrants.” This terminology has been seen as logically problematic and an oxymoron since the word “immigrant” is used to describe a group that has not immigrated themselves (e.g. NOU 2000: 14)<sup>9</sup>. There has also been a call from a Norwegian politician to bury the terminology.<sup>10</sup> I will in this thesis use the term “descendants of immigrants,” in an attempt to make it clearer that the group has not migrated themselves. The term, as I use it in this thesis, signify only the children of immigrants, not further generations.

Second, it has been common in research, politics and journalism to divide the world in two: the western and the nonwestern world (Høydahl 2008).<sup>11</sup> In immigration research, this dichotomy has translated into western immigrants and non-Western immigrants.<sup>12</sup> The divide has come from the need to simplify the terminology to be able to understand and explain social phenomena. Accordingly, the western and nonwestern divide has been useful in uncovering systematic differences in life outcomes (Høydahl 2008). Another way to categorize origin has been self-identification of ethnicity (Jacobs, Swyngedouw, Hanquinet, Vandezande, Andersson, Beja Horta, Berger, Diani, Ferrer, Giugni, Morariu, Pilati and Statham 2009). There is no easy way to make

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<sup>9</sup>Visit: <http://www.regjeringen.no/nb/dep/kd/dok/nouer/2000/nou-2000-14/23/2.html?id=143037> to read more [Read: June 21, 2013].

<sup>10</sup> Knut Arild Hareide, see <http://nrk.no/nyheter/norge/1.7214916>, [Read: June 21, 2013].

<sup>11</sup> To read more, visit: <https://www.ssb.no/befolkning/artikler-og-publikasjoner/vestlig-og-ikke-vestlig-ord-som-ble-for-store-og-gikk-ut-paa-dato> [Read: May 23, 2013].

<sup>12</sup> I will at times refer to descendants of non-Western immigrants, due to the large body of previous research that use this categorization. The non-Western category typically comprise all countries in Asia (including Turkey), Africa, Latin-America, and Oceania (excluding Australia and New Zealand).



these categorizations, but as we will see in the analysis, they have an important effect on the analytical results. A part of my solution to the problem is to conduct sensitivity tests on different categories, to see whether one constellation has a bigger effect than an other. I will report the results of these tests where I have conducted them.<sup>13</sup>

In the analysis, and throughout the study, I will use the categories descendants from OECD immigrants and descendants of non-OECD immigrants. The categories are based on the member nations of the trade organization, with the exceptions of the member countries Chile and Turkey that are transported to the non-OECD category. This strategy does not solve the problem of great within-group difference but it might help to make the categories more tangible and less arbitrary, while being able to pick up some of the systematic differences between immigrant groups.

The 34 OECD member countries are: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States.<sup>14</sup>

Yet other problems arise from grouping persons together and making generalizations. Grouping all descendants of non-OECD immigrants together is not unproblematic. Clearly the within-group difference among descendants of non-OECD immigrants is large. They are children of immigrants from countries as different as India, Morocco, Brazil and Vietnam. The within-group difference may include socio-economic status, religion, language, culture, and level of education. In the literature of the field, it has been common to advice further studies to separate these group categories into smaller country-based groups. When I still choose to group these people together, I have the following reasons.

Most importantly, my decision is a pragmatic one that has to do with sample size. Even though I use comprehensive register data, the analytic subgroups become very small when I select on many attributes at the same time. If I were to select on gender, specific national ancestry and educational group at the same time, all within a 10 year observation period, the groups would be very small indeed, and in some cases nonexistent<sup>15</sup>. Because my interest is to study between-group difference within certain educations, I choose to make the national ancestry groups bigger by

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<sup>13</sup> There will be a section on sensitivity testing in Chapter 4.

<sup>14</sup> Per 2013, from the OECD website: <http://www.oecd.org/general/listofoecdmembercountries-ratificationoftheconventionontheoecd.htm> [Read: May 23, 2013]

<sup>15</sup> For example, there is no registered male descendant of Vietnamese immigrants who studied Nursing in Norway between 2000 and 2009.

grouping many countries together. On the other hand, to separate each parental country of birth is far from unproblematic. No country has a homogenous population, and national ancestry works poorly as a proxy for cultural ethnicity. One extreme example is India, with its over one billion inhabitants who between them speak over a hundred languages and have over a hundred religions. To treat descendants of Indian immigrants as they have a similar background or cultural ethnicity is clearly an oversimplification (Heath and Cheung 2007a: 38).

Besides the pragmatic, there may be that grouping different national ancestries together does not have an important impact in my analysis. It has been argued that when the study selects on graduating higher education, it is a fair assumption that the descendants of immigrants in the sample share some attributes (Evensen 2008). In other words, the assumption is that higher education selects on certain personal attributes, which may have the effect that some of the initial heterogeneity (i.e. before entering higher education) is filtered, resulting in less within-group difference (and between group difference) across the categories.

Interestingly, there are more persons with a non-OECD ancestry than OECD ancestry in my data set. There are mainly two reasons for this fact. Non-OECD immigrants have a higher rate of endogamy, which means that they have more often children with other immigrants than OECD immigrants, who more frequently have children with persons of the majority population (Brochmann 2006: 366)<sup>16</sup>. While Pakistani, Somali and Vietnamese immigrants have children within the same national group 80 to 90 per cent of the time, the percentage for German and American immigrants were only 7 per cent. Consequently, many of the descendants of OECD immigrants will not be in my data set because they have a parent from the native majority population. Furthermore, immigrants from Nordic countries (within the OECD) are more often sojourners, staying in Norway only temporarily before moving back to their country of origin (Brochmann 2006).

#### **1.4 On the causes of inequality. Is it all discrimination?**

Recently, the attention of the media have been on minority persons with higher education from Norwegian institutions who struggle to attain employment after graduation.<sup>17</sup> The first mission of this thesis will be to investigate whether there are between-group differences in labour market outcomes. The second is to try to explain them. To document and survey the existence, extent and

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<sup>16</sup> For a thorough introduction of endogamy and exogamy among immigrants and descendants of immigrants in Norway, see Mohn (2010).

<sup>17</sup> For example: <http://www.nrk.no/nyheter/norge/1.10936293> [Read: June 21, 2013]

affect of discrimination on individual labour market chances is the most basic task for scholars studying hiring discrimination (Bursell 2012). However, to document illicit disparate treatment is complicated due to the almost complete lack of transparency of the recruitment process. Only recruiters know how many applicants who apply for a position, what their credentials are, and exactly which credentials the recruiters themselves are looking for in an applicant.

Finding the causes that lie behind the labour market outcomes is notoriously tricky, a problem I will come back several times throughout the thesis. The theoretical perspectives of labour market mechanisms are discussed in Chapter 3. These perspectives are human capital theory, discrimination theory and social network theory. Put briefly, between-group outcome differences could stem from difference in qualifications, unequal treatment of persons from different national origin groups, or social patterns that cause a bias in the job-relevant information current.

Identifying the relevant causes may have important policy consequences, as Heath and Cheung (2007a) note:

“Insofar as this ethnic stratification is caused by discrimination, whether direct or indirect, then it is a source of major public concern. Discrimination on the basis of ascriptive factors, such as social origin or ethnicity, is generally regarded to be a source of social injustice and, in the literal sense, social exclusion. It provides a major challenge to normative principles of equality of opportunity that are espoused by virtually all developed countries. It may also be a source of social disorder and policy interventions and continue to be of great concern to governments.”

This line of reasoning resonates with stated Norwegian government policy (Meld. st. 6, 2012-2013):

“Economic and social equality and tolerance are key values for the government. To realize these values, all forms of discrimination must be combated. (...) When individuals are discriminated against, this implies loss both for the individual and for society. Discrimination is a barrier to participation in the labour market, in education, in housing and in meeting with government agencies. To be subjected to discrimination may affect self-image and self-esteem. Moreover, discrimination may contribute to impair one’s sense of

belonging to the community and may result in less confidence in the government and less trust in other people.”<sup>18</sup>

The best way of identifying discrimination is not to study labour market results, and by finding inequality ipso facto infer discrimination. One of the basic premises in statistic theory is that correlation does not prove causation (Firebaugh 2008: 121). The main reason is that there could be many other mechanisms that could explain part of or the entire outcome gap between groups.

For example, in my analyses of national ancestry groups, it is very difficult to distinguish discrimination effects from the effect of different access to social networks. Furthermore, there could be a between-group difference in labour market preference. For example, one group may have a higher threshold for accepting job offers, or one group may be more mobile in the job market, valuing economic returns over loyalty or continuity.<sup>19</sup> These are empirical questions that are difficult to answer without the relevant data. As a consequence, there is not necessarily a connection between discrimination and empirically observable inequality, nor is the discrimination hypothesis disproven by the lack of any statistically observable differences between a majority population and a minority population. Still, a significant between-group difference could serve as an indication of discrimination (Rogstad 2002: 18), as could no observable difference indicate absence of discrimination.

Since the analysis in this study is not fit to measure discrimination directly, it may be constructive to put it in context with other discrimination research conducted with different methods. This strategy, which is called triangulation, can be used to cross examine the results. If I find an outcome gap between descendants of immigrants and native majority persons, and other studies provide evidence of discrimination, the conclusion that part of the gap is caused by discrimination is more robust.<sup>20</sup> For example, survey studies on subjective measures of experienced discrimination show that around 15% of non-western minority persons report discrimination (Blom and Henriksen 2007; Rogstad 2006). However, this approach has some problems as well. First,

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<sup>18</sup> My translation. The original text in Norwegian: “Økonomisk og sosial likhet, likeverd og toleranse er sentrale verdier for regjeringen. For å realisere disse verdiene må alle former for diskriminering bekjempes. Personer med innvanderbakgrunn kan møte ulike former for diskriminering, som innvandrere, som muslim, som homofil eller på grunn av nedsatt funksjonsevne. Når individer diskrimineres, medfører det tap både for den enkelte og for samfunnet. Diskriminering er barrierer for deltakelse i arbeidsmarkedet, i utdanningssystemet, på boligmarkedet og i møte med offentlige etater. Det å bli utsatt for diskriminering kan ha betydning for selvbildet og selvfølelsen. Diskriminering kan bidra til svekket tilhørighet til fellesskapet, og kan medføre mindre tillit til myndighetene og mindre tillit til andre mennesker.”

<sup>19</sup> I am here discussing the within-group mean average, the distribution will in these examples overlap across national ancestry groups.

<sup>20</sup> I will discuss conclusion validity further in sections 4.3 and 4.5.

since they are survey studies, they may have problems with representative samples, especially from self-selection bias (i.e. the persons who decide to be respondents may be different from those who decide not to participate in the survey). Second, subjective measure of discrimination is not the same as actual discrimination. To illustrate, imagine a boy and a girl who applied for the same job opening that later neither got a job offering from. The girl may have been the best qualified of the applicants, but was discriminated against. However, as she did not have access to the other applicant's résumés, she never became aware of the discrimination. On the other hand, the boy, who incidentally did not have the best qualifications, but had had his applications turned down many times in the past, may feel he has been discriminated against. That these studies have potential problems is not to say that these studies are worthless, but that precautions in the interpretation and especially in the generalization of the results are important.

Until now, the most useful published study to directly measure discrimination in the Norwegian labour market might be a randomized field experiment by Midtbøen and Rogstad (2012). The study measured call back frequencies for applications sent to advertised job openings from fictitious applicants. Half of the applications were signed with a Pakistani sounding name, and the other half were signed with a Norwegian sounding name. The applications had similar qualifications, but were worded differently. To secure that the slightly different applications did not bias the response, each name was half of the time applied to the first application and half of the time applied to the second. The results showed that the applications signed with the Norwegian sounding name received more call backs than applicants with a foreign sounding name with similar credentials.<sup>21</sup>

A yet unpublished three stage study using the same design as Midtbøen and Rogstad (2012) has been conducted in Norway afterwards. While Midtbøen and Rogstad conducted their study in the fall of 2010, and sent applications to advertised job openings in Oslo and its vicinity, the first stage of the DISCRIM project<sup>22</sup> was conducted in Oslo in the fall of 2011. The timing is especially significant because it took place in the months after the terrorist attacks in Oslo and on Utøya, on July 22. 2011, and the study could thus measure the effect of the attacks on the call back frequency. On the one hand, the study found that for persons with higher education there were no difference in

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<sup>21</sup> The results: 13 % of the employers gave only a call back to the «Norwegian» applicant, while 2 % did the opposite. 30 % gave a call back to both and the rest of the employers did not contact any of the applicants (Midtbøen and Rogstad 2012: 78).

<sup>22</sup> The project is supervised by Gunn Elisabeth Birkelund at the Department of Sociology and Human Geography, University of Oslo. See the project's homepage for more information, visit: <http://www.sv.uio.no/iss/english/research/projects/discrim/paper-presentations/>, [Read: June 21, 2013]

call back rates between the foreign sounding name and the Norwegian sounding name.<sup>23</sup> On the other hand, there was found discrimination in unskilled, male-dominated jobs, like within the transportation and warehouse industry (Birkelund, Midtbøen, Rogstad and Ugreninov 2013).

The second stage of the DISCRIM project conducted the field experiment in the Norwegian cities Bergen, Stavanger and Trondheim. The third stage was conducted in Oslo and investigated what happened with the call back frequencies when the applications mentioned that the CV contained a two year unemployment gap. The studies await publication.

The field experiment studies were mostly conducted after my observation period, but they are interesting in context with my research. While the Midtbøen and Rogstad study found discrimination, the DISCRIM studies found no discrimination for persons with higher education. The first study implies that discrimination affects the outcomes of the persons in my data set.<sup>24</sup> However, the generalization of the results has limitations. For one, these types of field experiments measure only discrimination in the first phase of the hiring procedure, and we do not know from these studies who actually gets a job offer. Second, the results only apply to the publicly advertised job openings, but an important path to gaining employment is social networks (Try 2005; Hansen 1997; Granovetter 1995). The field experiment can thus not analyze discrimination or lack of discrimination within social networks. Third, as argued by Fryer and Levitt (2003), the obstacle that discriminatory employers constitute for minorities does not necessarily have important long-term effects. It may rather be that minorities facing discrimination simply have to apply for more jobs until they meet an unprejudiced employer who hires them. Fourth, the economist Heckman (1998) argues that the results found in the field experiments might not mean anything at all concerning real-life inequalities. For one, real life situations in which equally merited applicants vary in only ethnicity rarely, if ever, occur. Furthermore, sending out applications to random employers in random industries and sectors may bias the results. Real applicants, Heckman argues, choose neither occupation nor a prospective workplace randomly. To the contrary, the labour market is often segregated, and sending out applications to labour market segments where minorities are unrepresented is not consistent with the real-life application process. Field experiments analyze thus potential discrimination, not actual discrimination. For example, there may be segments of the labour market that are discriminatory, but which have no minority applicants to discriminate.

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<sup>23</sup> Results presented in Norwegian newspaper *aftenposten*, visit: <http://www.aftenposten.no/meninger/kronikker/Hoy-utdannelse--ingen-diskriminering-7152166.html#>.UcSHq-vVlhw, [Read: June 21, 2013]

<sup>24</sup> At least, discrimination could affect the employment probability of those who graduated in 2009 and looking for work in 2010.

Randomized field experiments have been conducted in neighbour country Sweden as well. The Swedish results were similar, but with evidence of somewhat more discrimination than what have been found in the Norwegian labour market (Bursell 2013; Carlsson and Rooth 2007).<sup>25 26</sup>

The extent of the external validity of the field experiments to my register data analysis is difficult to establish. With register data at my disposal, I will in my analyses be able to examine real-life outcomes, but how does discrimination affect those outcomes? A recent Swedish study considers this question. Bursell and Grand (2012) link register data with field experiment data and use propensity score matching method to identify real-life “twins” to the fictive persons of the correspondence test, i.e. persons with equivalent characteristics. Then, they analysed the real labour market outcomes of the identified “twins” and compared the outcomes with the results of the correspondence test. They found that the register data results are mainly consistent with the results of the correspondence test, and conclude that we can draw conclusions about discrimination based on the results from register data with more assurance than before.

## 1.5 Immigration into Norway

Since this thesis is about the Norwegian born children of immigrants, it could be of value to have a look at Norway’s recent immigration history. Norway did not become a net immigration country until 1968 (Brochmann and Kjelstadli 2008: 288). Since then, there has been a rapid increase in numbers of immigrants. At the beginning of 2013 it was registered nearly 600.000 (12% of the population) immigrants in Norway, and 117.114 Norwegian-born children of immigrants.<sup>27</sup> In 2010, Statistics of Norway predicted that the immigration population in Norway would increase to between 1 and 1.8 million in 2060, and the number of Norwegian-born children of immigrants would increase to from 300.000 to 500.000.<sup>28</sup>

There is considered to be three main phases of recent immigration history (Fangen and Mohn 2010). The first phase is characterized by predominantly young male work immigrants who were granted a job permit if they had a job offer. This phase ended a few years later in 1975, with

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<sup>25</sup> Rather than a Pakistani name, the name the Swedish study used was Middle Eastern.

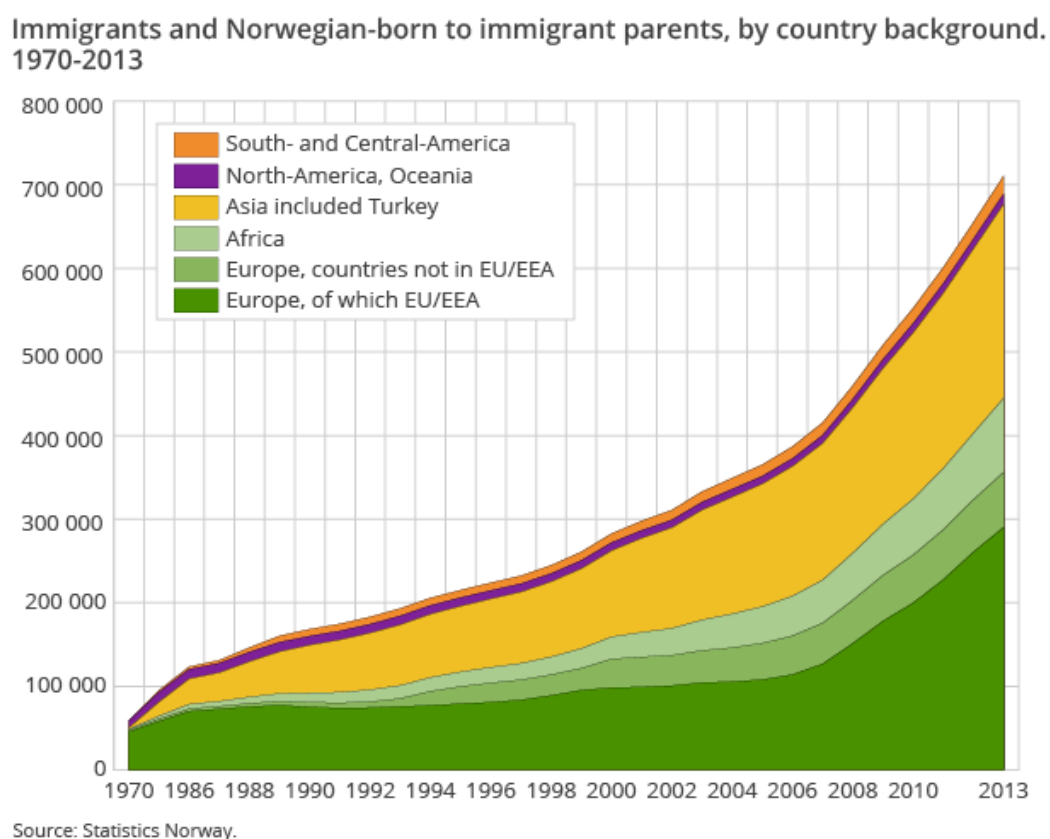
<sup>26</sup> For an international overview of conducted randomized field experiments, see Riach and Rich (2002). For a discussion of ethical considerations of field experiments, see Riach and Rich (2004).

<sup>27</sup> Figures are from Statistics Norway’s statistical database “Statbank Norway”, which is the source for most of the population statistics presented in this section. Visit <http://statbank.ssb.no/statistikbanken/> for details [Read: May 21, 2013].

<sup>28</sup> To read more about the predictions, visit: <https://www.ssb.no/befolkning/statistikker/innvfram/aar/2010-06-15> [Read: May 21, 2013].

the introduction of a moratorium on immigration. Paradoxically, what followed was increased immigration that mostly consisted of immigrants through the family reunification program. These were the parents, siblings and children of the work immigrants who came a few years earlier. As a consequence, the rate of immigrants increased after the temporary immigration stop<sup>29</sup>. The third phase consisted mostly of refugees and asylum-seekers, which started with Vietnamese refugees at the end of the 1970s and reached its peak at the end of the 1980s (Brochmann and Kjeldstadli 2008).

Work immigrants have been the largest immigration group since 2006, after being a relative minor immigrant group earlier in the decade compared to refugees and immigrants through the family reunification program. In 2011, a record high of 54.319 immigrants came to the country, in which half were work immigrants, nearly a third were immigrants from the family reunification program, a tenth refugees and a tenth education immigrants. Immigrants in Norway come from 214 different countries, and two-thirds of the immigrant population came from non-Western countries (Fangen and Mohn 2010).



**Figure 1.1:**

<sup>29</sup> The moratorium was in reality not a stop, but a selective immigration policy that aimed to limit uneducated work employees from the “third world” (Brochmann 2006: 359). The moratorium was put in effect after several European countries had done the same, and it introduced the policy of a limited and controlled immigration that has been prevalent since.



## **1.6 The outline of the thesis**

My study is divided into eight chapters. Chapter 2 is a review of previous research on descendants of immigrants internationally and particularly in Norway. This part is divided into three subparts in which I look at the educational achievement, the transition from graduation to employment, and career development of descendants of immigrants compared to the majority population. At the end of the chapter I give a summary of the research and discuss how my thesis fits in the dialogue of the research field.

In Chapter 3, I discuss three theoretical perspectives on labour market outcomes and their predictions for my analyses. The theoretical perspectives are human capital theory, discrimination theory and social network theory. I discuss the perspectives considering how they can affect the labour market outcomes differently for descendant of immigrants compared to native majority persons. These perspectives are the framework I use to understand my findings.

Chapter 4 is a presentation of my data set and the methods I use in my analyses. The chapter includes a list of the variables I use in the analyses and how they are operationalized. Furthermore, the chapter contains presentations of the statistical tools I have used in the analyses. At last, it contains a discussion of the methodological complications I face in the interpretations of the results. Chapter 5 is a brief presentation of a few chosen descriptive statistics. Among these are statistics on which countries that make up the OECD and non-OECD categories and employment frequencies the year after graduation with different thresholds.

Chapter 6 and 7 are the analytical chapters. In Chapter 6 I analyze the probability to be employed the year after graduation, and in Chapter 7 I analyze the early career earnings after gaining employment. Chapter 8 is a discussion of the results of the analyses. In the discussion, I will use the theoretical framework and earlier studies to interpret the results and give support to some of the hypotheses of Chapter 3.

## **2**

### **Previous research**

I will in this chapter present the relevant previous research. The focus will mainly be on descendants of non-western immigrants and their outcomes in the Norwegian labour market. This part is separated in two: the studies of employment, and the studies of career development. Both sections have a prelude of international research to enable cross-national comparison. Since the perspective of this study is on people with higher education, I will start by reviewing Norwegian educational careers. At the end of the chapter, I will try to place my study within the field's dialogue, and answer the question of what separates my study from the previous research done in the field.

## 2.1 Educational attainment

There are two ways to compare the educational attainment of the majority population to descendants of immigrants, one is vertical and the other horizontal. The first way is to measure the level of education, and asking questions like: how many years are they studying, and do descendants of immigrants at average study less than majority persons? The second way is field of education, and to ask questions about what they study and whether descendants of immigrants as a group has a tendency to study other educational fields than the majority population.

In Europe, there is a pattern where descendants of immigrants from less developed non-European countries tend to have lower educational attainment than their respective majority groups (Heath, Røthén and Kilpi 2008; Heath and Cheung 2007b). Descendants of European immigrants tend to achieve more education than children of non-European immigrants, but lower than the majority population. In Norway, the research on the difference between majority and minority in education is open to more than one interpretation. Henriksen and Østby (2007: 34) found that it is just as common for descendants of non-western immigrants between 19 and 24 years to be in education as the majority population. Contrary to their findings, Fekjær (2006: 72-73) found that descendants of non-western immigrants have a lower estimated probability of completing their education. Furthermore, Fekjær found that this ethnic gap grows with age for all educational levels. It is important to note, however, that there are substantial heterogeneity between groups of descendants with different countries of origin. On the one hand, descendants of immigrants from Turkey and Chile achieve at average considerably less education than the majority population, while on the other hand descendants of immigrants from Vietnam, India and China achieve more education than the majority group (Fekjær 2006).

Interestingly, when descendants of immigrants are grouped together, they have a lower probability to finish upper secondary education than the majority population (Bratsberg, Raaum and Røed 2011; Fekjær and Brekke 2008; Grindland 2009), but the probability to finish a University college degree is the same (Helgeland 2009). Descendants of immigrants have lower grade scores in upper secondary education, and controlling for the grade points eliminates the entire difference in upper secondary school completion between descendants of immigrants and native majority persons (Bratsberg, Raaum and Røed 2011). In short higher education (i.e. BA-level) too, descendants of immigrants achieve lower grade points than the native majority (Kolby and Østhus 2009).

It has been suggested that descendants of immigrants as a group can be split in two: those who drop out of upper secondary education, and those who finish higher education (Birkelund and Mastekaasa 2009: 29). Descendants of immigrants do not have lower aspiration than the majority

population - the contrary seems to be the case. Their relative high aspiration has been branded a “immigration drive” (Birkelund and Mastekaasa 2009). Combining qualitative and quantitative data, studies on descendants of Pakistani, Indian and Vietnamese immigrants support the claim of an immigrant drive, finding that family relations affect their educational choices positively (Fekjær and Leirvik 2011; Leirvik 2010).

Let us move to the horizontal choices within higher education. On the one hand, descendants of non-western immigrants, who studied at a University college, are underrepresented in most social sciences and humanity studies (Schou 2009). The underrepresentation is especially prevalent in educational fields like art, culture and teaching. On the other hand, they are overrepresented in educational fields like science and health professions (i.e. Medicine and Nursing). Also, descendants of non-western immigrants are more likely to study Business and Commerce compared to majority persons (Schou 2009; Henriksen and Østby 2007).

Turning to gender differences; women are more likely to complete upper secondary education and lower-level higher education than men, both for descendants of non-Western immigrants and native majority persons (Støren and Helland 2010; Fekjær 2006: 67-68). The gender difference is found to be larger for descendants of non-western immigrants than for native majority persons. Within-gender differences occur in the horizontal dimension of education. For girls, descendants of Vietnamese immigrants are three times as likely to choose natural sciences, and descendants of Indian immigrants are three times as likely to choose health professions, compared to native majority girls (Schou 2009).

## **2.2 The transition from education to work**

Although the immigration research in Norway is extensive, there has up to this point not been done much research on descendants of immigrants in the Norwegian labour market. Because of their relative young age (see Figure 2.1 for illustration), the attention has mostly been directed at their educational attainment. As we will see, this has somewhat changed during the last few years, but the catalogue is still slim. The young demographic has made research difficult, especially for highly educated groups that usually do not enter the labour market before their mid-twenties. I will start by presenting studies on the transition from education to work, and go on to present studies on career development.

Internationally, a cumulative buildup of research indicates that children of immigrants have lower probabilities of getting employed. Studies conducted in several OECD countries, collected in the seminal work of Heath and Cheung (2007b), found that descendants of immigrants have a

higher risk of unemployment than their respective majority groups, regardless of their national ancestry.

**Figure 2.1:** Immigrants and Norwegian born to immigrant parents, by age and gender. January 1, 2008 (Daugstad 2009).



Source: Population Statistics, Statistics Norway.

Corroborating this trend, a study of the labour markets in the United Kingdom, France and Germany found that in each country descendants of immigrants had lower probabilities of being employed compared to the majority population, after controlling for education, potential experience and regional allocation (Algan et. al. 2010). Typically, children of immigrants do better than their parents, but not for every group. While it was documented a large improvement for descendants of immigrants in the United Kingdom, a number of national ancestry groups in France seemed to be doing worse than their parents. In the Netherlands, being a descendant of immigrants does not seem to have much of an impact on wages, job levels, probabilities to have a steady job or probabilities to have a full-time job<sup>30</sup> (Ours and Veenman 2004). The main exception to this pattern is the employment probabilities, descendants of Turkish, Moroccan and Surinamese immigrants have a smaller likelihood of having a job than other groups do.

<sup>30</sup> A full-time job was defined as a normal working week of more than 33 hours.

Studies conducted in Norway's neighbour countries Sweden and Denmark show that descendants of immigrants on average use longer time in the transition period between employment and graduation (Hällsten and Szulkin 2009; Behrenz, Hammarstedt and Månsson 2007; Rooth and Ekberg 2003; Nielsen, Rosholm, Smith and Husted 2003). The Danish study (Nielsen et. al. 2003) found that the effect of one extra year of education is much lower for descendants of immigrants than for ethnic Danes. A Swedish study added the results from a cognitive test<sup>31</sup> in their models to measure the effect of IQ on labour market outcomes (Nordin and Rooth 2009). The study found that the IQ variable explained almost the entire income gap between the native majority and descendants of immigrants, whereas the employment gap was not affected at all by the inclusion of the variable.

Previous research in Norway corresponds to the international, descendants of immigrants are less likely to be employed than their majority peers. Hermansen (2013) found that the probability of being employed, for both men and women, was lower for descendants of immigrants than for their native majority peers with similar education and social origin. The main barrier facing descendants of immigrants seems to be getting employed. For men, the probability of being employed was 3 to 8 per cent higher for majority persons than for ethnic minority persons, except for those with Nordic-born parents. The pattern was more heterogeneous for women, the employment gap between majority and minority ranging up to 15 per cent. Hermansen found, however, no clear variation in employment gaps across vertical education levels. A different study found that for persons under the age of 25, the level of participation, measured as either going to school, being employed, or both, is nearly the same for descendants of non-western immigrants as for the native majority (Olsen 2008). Concerning participation level, the study indicates that descendants of immigrants in Norway are more similar to the majority than the immigrant population. While the participation gap was bigger for persons over 25, it was mostly female descendants who caused the widening gap.

One study looks into the labour market outcomes of persons who attained University College degrees (*høgskoleutdanninger*) in the period 1993-2005 (Evensen 2009). The study found that descendants of non-Western immigrants had lower probabilities of securing paid employment during the first year after graduation compared to the majority population.<sup>32</sup> An important discovery was that these employment differences vary and in some educational fields there existed no gap between the two groups. Similarly, using survey data and combining immigrants with descendants of immigrants, Arnesen, Støren and Wiers-Jenssen (2012) found that minority persons with higher

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<sup>31</sup> Data from The Swedish Military Enlistment test.

<sup>32</sup> The threshold level of being employed was in this study set low, any person with work related income was classified as employed.

education were less often employed six months after graduation compared to their majority peers. The employment gap was especially prevalent between minority and majority with MAs in Science and Technology, while they found no between-group gap for persons with a BA in Engineering. Other research corroborates the notion of varying opportunities across educational qualifications as well. On the one hand, in a study of persons with vocational education, Brekke (2006) found that descendants of non-western immigrants have almost the same level of employment as the majority. On the other hand, looking only at highly educated women, Drange (2009) found that persons with non-western ancestry had significantly lower probabilities of getting full-time employed compared to the majority group.<sup>33</sup> Using register data, one study looked at employment probabilities one and three years after graduation for descendants of Pakistani and Indian immigrants (Ekre 2013). The study found a consistent pattern of lower probabilities to be employed for the groups of Pakistani and Indian ancestry compared to native majority persons. However, when leaving the majority population out of the models and analysing employment probability gaps between descendants of Indian immigrants and descendants of Pakistani immigrants, there was found no statistically significant results.

## 2.3 Career development

Career development is what happens after gaining access to the labour market. An important part is earnings, the economical returns for the effort and skill that the employee puts into the work. Another part is occupational attainment (type of job). In this section, I will focus on how descendants of immigrants succeed after getting employed compared to the native majority.

While there are documented consistent unequal probabilities of gaining employment, the pattern of post entrance returns are more complex. On the one hand, in Germany and France, the wage assimilation is weak across generations and across national ancestry groups, with the exception of descendants of immigrants from most European countries and female descendants of Asian immigrants in France (Algan et. al. 2010). On the other hand, in the United Kingdom, the wage gap narrows substantially across all groups from the immigrant population and the second-generation population. The wage disadvantage is small for all but female descendants of African immigrants (Algan et. al. 2010). Measuring achieved occupational class<sup>34</sup>, studies across several

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<sup>33</sup> In this study, the threshold level of being in full-time employment was an agreed work time of 30 hours or more per week.

<sup>34</sup> Using a shortened version (5 classes) of the Erikson/Goldthorpe classification of occupational class, all the studies were measuring the access “to the relatively secure and privileged professional and managerial work of the salariat and their avoidance of semi- and unskilled work” (Heath and Cheung 2007a: 30).

OECD countries (Heath and Cheung 2007b) have found no ethnic disadvantage for descendants of immigrants after employment is secured. These countries were Australia (Inglis and Model 2007), Canada (Yu and Heath 2007), Great Britain (Cheung and Heath 2007), Sweden (Jonsson 2007), and USA (Model and Fisher 2007). However, studies in other countries have found minor disadvantages for some national ancestry groups; in Belgium (Phalet 2007), in Germany (Kalter and Granato 2007), and in Israel (Shavit, Lewin-Epstein and Adler 2007). The results of a Norwegian study, which used the same methodology, found that the Norwegian pattern falls in first category. Hermansen (2013) concludes that “there is no evident pattern of ethnic disadvantage in access to advantaged managerial and professional positions in the upper and lower service class.”

The Norwegian pattern is different when it comes to earnings. Male and female descendants of immigrants with higher education start their careers earning slightly less than their majority peers, and keep earning less the first years of employment (Brekke and Masekaasa 2009). There could be an exception for men, which seem to converge with native majority men over time, and may even surpass them after a few years. Similarly, among persons with a vocational education, descendants of immigrants have considerably lower earnings immediately after graduation compared to the majority, but this earning gap decreases with time since graduation, and the earning gap is minor when only persons who are fully employed are compared (Brekke 2009). Furthermore, women with higher education, descendants of non-western immigrants make significantly less the native majority two years after graduation (Drange 2007). And lastly, looking at University College graduates, Evensen (2008) found small but systematic earning gaps between descendants of non-western immigrants and the majority population across all sectors, except in the health sector.

These results are consistent with the general findings of the Norwegian immigrant literature: there is an initial earnings gap which narrows over time as immigrants spend time in the host country (e.g. Barth, Bratsberg and Raaum 2012<sup>35</sup>; Drange 2013; Brekke 2009; Galloway 2006; Brekke and Mastekaasa 2008<sup>36</sup>; Wiborg 2006).

## **2.4 Summary, and the study in relation with previous research**

The review of previous research suggests that there is a bottleneck in the entrance to the labour market, both internationally and in Norway. The difference between the probability of being

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<sup>35</sup> Barth, Bratsberg and Raaum (2011) found that 40% of the earning gap between majority and immigrants is explained by differential sorting across establishments. The inferior earning growth came primarily due to lower job mobility: immigrants failing to advance to higher paying establishments over time.

<sup>36</sup> Brekke and Mastekaasa (2008) found that the earning gap declined with time of residency, but when they held time of residency constant the gap diverged with time.



employed are greater than the ethnic gap within the labour market. The small earning gap early in the career mostly disappears after a few years of employment, although it is important to note that there are some diversity and for a few groups there seem to be a persistent earning gap to the native majority. Furthermore, there seems to be a substantial between-group difference across the horizontal educational spectrum. Lastly, there seems to be a gender difference affecting labour market returns.

My study adds to the previous research in a few ways. My thesis explores newly available data, with labour market information from 2000 until 2010. The labour market fluctuates from year to year, and the Norwegian society is subject to change as well. The continuous change means that analyses of old data does not necessarily generalize through time. It is thus important to continue the research as new data becomes available. As to my choices of study design, I have decided to look exclusively at persons with higher education. Focusing solely on highly educated persons enables me to look specifically at the effect of a few chosen specialized educational fields on labour market outcomes. To separate gender effects, I will do separate regressions for men and women. This approach makes the results easier to interpret because it reduces the numbers of variables in the model, as well as it reduces the number of degrees of freedom, which affects the significant testing.

Hermansen (2009: 116-117) advises further research on descendants of immigrants to explore whether systematic differences in the selection to educational fields, within the same educational level affects the between-group differences in labour market outcomes. In addition, Hermansen suggests further study of the economical returns in the labour market. My study aims to tackle both these points and thus to complement previous findings.

There are a few points where my study diverge from previous investigations in the field. Some earlier studies have included persons who immigrated to the country before the age of 7 in the descendant of immigrant groups (e.g. Hermansen 2013; Evensen 2009). Contrary to them, I have only included persons who were born in Norway in my data set. This is an important next step in the literature because there have been documented differences between young immigrants and Norwegian-born descendants of immigrants, for example in educational attainment (Bratsberg, Raaum and Røed 2011).<sup>37</sup> One reason for this difference could spring from the important formative years of children's language development affecting the language abilities later in life, another reason could be that the experience of immigrating itself has an affect on educational attainment

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<sup>37</sup> This pattern is found to hold for both gender, within families (between siblings) and after controlling for parental years of residency in Norway.

and labour market outcomes. Furthermore, my study includes both University graduates and University College graduates, whereas some earlier studies have only used University College graduates.

Moreover, I add real job experience in my models, rather than potential experience.<sup>38</sup> Potential work experience is often estimated as age minus the age at which the individual left school (e.g. van Ours and Veenman 2004). I, however, compute the job experience as years after graduation where the individual has registered earnings.<sup>3940</sup> To qualify as employed in the first analysis, transmission from graduation to the labour market, however, each person need to have an agreed weekly working time of 30 hours per week and annual earnings over 2 BA. The constructed employment category secures that the employment is substantial in both earnings and work hours, signifying a significant attachment to the labour market. Small part time jobs and jobs with low monetary returns will therefore not count as being employed in this study.

My empirical design is stripped of social origin variables like parental education and income. To include social origin variables are especially problematic in immigration research, because a person's educational attainment is strongly influenced by the educational opportunities in the country of origin (van de Werfhorst and van Tubergen 2007). Furthermore, because many immigrants experience downward social mobility after migration, the situation of immigrants and native majority persons are widely different, and their social status may affect their children differently as well. For example, the parents' education level is of less importance for students with a non-western background than for native majority persons (Støren and Helland 2010). My main focus is rather on the labour market returns relative to the qualifications of the employee.

I will in the next chapter present and discuss three theoretical perspectives that are common in labour market analyses, which may influence the labour market outcomes that are the subject of my analyses. These perspectives are human capital theory, discrimination theory and social network theory. I will put a particular emphasis on supply-side theory, which will guide my analytical design. The theories are important to gain insight into labour market mechanisms, and I will use them to form hypotheses that I will test in the analyses.

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<sup>38</sup> In the immigrant assimilation literature, "to identify the effect of assimilation, it is particularly important to measure actual work experience rather than just potential experience" (Nielsen, Rosholm, Smith and Husted 2004).

<sup>39</sup> A detailed explanation of the variable can be found in Chapter 4.

<sup>40</sup> However, neither this job experience estimate is optimal. First, it misses possible job experience accumulated before graduation. Second, because the threshold of job experience is set so low (only registered earnings), there are great differences in how much job experience the persons in the data set have gathered during one year.

# 3

## **Theoretical perspectives**

My thesis is an empirical investigation of comparative outcomes between the native majority and descendants of immigrants in the Norwegian labour market. To explain what causes the outcomes, I need theoretical perspectives. The theories serve as a framework to understand labour market dynamics which influence inter-individual and between-group differences in employment probabilities and earnings. Furthermore, they help us to predict outcomes, and can be tested against my empirical findings. Three main factors are considered to contribute to outcomes in the labour market (Granovetter 1981):

- 1) The characteristics of the job and employer;
- 2) The characteristics of the individual who occupies the job; and
- 3) How 1 and 2 get linked together - what might be called matching process.

Although all three factors are considered important in shaping the complex pattern of labour market opportunities, my approach is mainly on the affect of factor 2. In the theoretical discussion then, I will give privilege to the examination of the theory of human capital which explains the relationship between human productivity and labour market outcomes. However, the theories regarding factor 1 and 3 are also important in discussing the results of the analyses. I will start with a general discussion of human capital theory and pursue more specifically how it relates to my research questions. The chapter will then provide a presentation of theories related to factor 1 and 3, which are discrimination theory and social network theory, respectively.

### **3.1 Human capital and how it affects labour market outcomes**

According to human capital theory the differences in labour market outcomes are the result of a person's education and labour market experience (Becker 1993). Hence, the theory falls into the category of «the characteristics of the individual who occupies the job» and explains how these characteristics influence outcomes. I will in this section first explain some of the general principles of human capital further, and then show how I will use the theory as an analytical approach.

The concept of human capital comes from the neoclassical economics tradition, viewing people as economically rational and informed agents in a market. The human capital theory views education as a form of capital, which causes higher productivity and thus higher labour market returns. In Norway, a typical estimation of the earnings increase from one year extra education is five percent (Hægeland 2002a). A five percent increase is similar to neighbouring countries Denmark and Sweden, but lower than many other European countries and substantially lower than USA. Earnings are determined by a complex interplay of mechanisms like demand, supply and institutions. On the demand side, profit maximizing firms will employ applicants and pay employees according to his or hers marginal productivity, while on the supply side, rational workers invest in different types of human capital to increase their labour market returns (Mincer 1974).

As economically rational agents, individuals invest in human capital to improve their chance to get employed and receive higher earnings. Education is seen as an investment because it enhances the owner's subsequent productivity, like a business that buys a new and better machine (Nerdrum 1999: 53). The individual is a private investor who invest in certain human capital as a maximising behaviour. Education becomes a strategy to maximise lifetime earnings by increasing

productive capabilities. The cost of taking the time to go to school and paying tuition is measured up against the potential income gains over the course of the individual career.

Formal education and job experience are two often used types of human capital, both in sociological and economical research (Heath and Cheung 2007a: 4). For individuals without job experience, education may be an especially important predictor of the probability of getting employed. Still, graduation does not entail the completion of the training process (Becker 1993: 30-33; Mincer 1962). After employment, education and the accumulating job experience will have an interplaying role affecting the earnings trajectories. Hægeland (2002b) shows that education has an impact on the returns of job experience in Norway. A person with higher education profits more from his or hers labour experience than a person with lower education. In the earnings analyses, I will include education and job experience as important explanatory variables.

Education may not solely function as a tool to increase productivity of the individual. Employers may value the skills obtained from education, but they could also value the education as a signal of skills. Some economists have the view that education serves primarily as an imperfect measure of ability more than as evidence of acquired skills (Stiglitz 1975; Arrow 1973: 193-194). This view represents an alternative way of looking at education. On the one hand we have the view that education adds to an individual's productivity, and in doing so increases the market value of his labour (Becker 1993). On the other hand, education serves as a screening device, a filter, a signal, to sort out individuals with different abilities, and thereby convey information to the demand side of the market (Arrow 1973). Although not everyone will subscribe to the view that education functions only as a filter, the discussion is important in understanding how human capital affects outcomes. The filter theory assumes that agents, like employers, have highly imperfect information about the applicants of a position. Furthermore, because the buyer of a worker's services has a poor idea of his productivity, education provides valuable information. Education can function as a double screening process. The first screening process is the selection of entrants to the educational program and the second screening process is to pass or fail students. If we assume that the abilities that are required to enter and graduate University are positively correlated with the productivity in the labour market, education could have value as a signal even if it didn't increase productivity.<sup>41</sup>

Both the view of productivity and the view of signalling predict a positive correlation between education and labour market returns. As Goldthorpe (2007) notes: "It could be that education provides saleable knowledge and skills; but it could also be that education is used by

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<sup>41</sup> As a response, Becker (1993: 8) retorted "virtually no effort has been made to determine the empirical importance of screening."

employers chiefly as an indicator of job-seekers' psychological or social characteristics; or, again, that education allows individuals to pass credentialist filters chiefly set up to suit employers' convenience or to restrict the supply of labour to particular kinds of employment."

Although descendants of immigrants in Norway are born and raised in the same country there might be differences in mentality arising from their minority experience. A «drive factor» has been suggested (Birkelund and Mastekaasa 2009: 29). Descendants of «non-western» immigrants have been found to have higher educational aspirations than the native majority with similar school performance (Bakken and Sletten 2000). This tendency is found in Sweden too, where descendants of immigrants achieve more education than the charter population after controlling for cognitive ability test scores (Nordin and Rooth 2009), and choose more education despite lower grades in school (Jackson, Jonsson and Rudolphi 2012; Jonsson and Rudolphi 2011). Descendants of immigrants may thus have some unobserved characteristics that differ from their native peers. This drive factor could cause a selection effect that may cause problems when I include education in the analytic models. I will discuss this selection problem in the next chapter, but for now it will suffice to say that it is difficult to predict how this dissimilarity will affect their labour market outcomes. On the one hand, if the ability level in an education group is lower for descendants of immigrants than for the majority population I would expect that the higher ability group had higher returns in the labour market than the lower ability group. On the other hand, if the drive effect that cause higher motivation continues in the labour market, the ability gap may be cancelled out. The gap might even be turned around--making the lower ability group more productive because of higher motivation.

The view point of human capital can be applied to derive predictions of labour market outcomes for descendants of immigrants. Which predictions can be made? First, from the basic assumptions of human capital theory, I form the hypothesis that individuals with similar education have similar probabilities to get employed after graduation. Second, persons with higher levels of human capital have higher productivity than persons with less human capital and they will have higher returns on the labour market (Card 1999). I will therefore predict that individuals with similar education and job experience will have similar earnings. Hence, individuals with intervals of unemployment in their job career are likely to have lower economical returns  $x$  years after graduation compared to those with an uninterrupted period of employment. Thus, to compare earnings trajectories from a human capital perspective I must control for years of job experience. When controlled for these factors, I predict with human capital theory that the earnings of descendants of immigrants and the majority are alike.

**H1:** *The probability to get employed the year after graduation is the same for descendants of immigrants as for the majority population with similar education.*

**H2:** *The earnings are the same for descendants of immigrants as for the majority population with similar education and job experience.*

The results of the analyses may, however, show evidence of a net difference that needs different explanations than human capital theory. In the following I will sketch out two additional theories that will assist us to understand the complex nature of labour market outcomes and differences.

### **3.2 Discrimination, theory and effect**

While human capital theory focuses on the employee, theories of discrimination focus on the employer. Discrimination theory considers how the preferences, orientations and biases of the employer affect the hiring situation. Getting employed and making a career for the employee is always a dyadic process that involves an employer, which makes it important to have a multidimensional view on the causes of labour market outcomes. However, it is important to note that my study design is only suited to measure between-group differences, not direct employer discrimination. As I will come back to in the method discussion in the next chapter, between-group difference could stem from unmeasured heterogeneity, such as non-discriminatory causes that are not included in my analytical models (Midtbøen and Rogstad 2012: 50-51). Nonetheless, as we saw in the previous chapters, there are research that suggests the presence of discrimination. Therefore, any between-group difference I might find, could in part be a consequence of this discrimination.<sup>42</sup>

I will not start a normative discussion about what kind of differential treatment is right and wrong. Most people will consider some differential treatment legitimate, like hiring the applicant with the best credentials (Rogstad 2002). I use a common definition of discrimination, which is «differential treatment of persons because of status characteristics that are functionally irrelevant to the outcome in question» (Merton 1972). Discrimination thus defined is a counterfactual statement. Discrimination takes place if an otherwise identical person is treated differently because of that person's ethnicity, and ethnicity by itself has no direct effect on productivity (Heckman 1998). There are two theoretical approaches to discrimination that are worthwhile distinguishing:

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<sup>42</sup> For a thorough discussion of the individual, organizational and structural mechanisms that may underlie contemporary forms of discrimination, see Pager and Shepherd (2008).

*preference for discrimination* and *statistical discrimination*. Preference for discrimination is based on the employer's preference or taste, what Becker (1971) calls the «taste for discrimination». A preference for discrimination means that an employer favours one person over another because of a non-work related trait (e.g. gender or ethnicity). A possible consequence of this preference is that the employer hires someone that is not the most qualified for the position, and thus except to reduce the revenue of the business to avoid hiring an unwanted person (Rogstad 2002). For example, a discriminate employer could hire a man, instead of hiring the woman with the best qualifications. This type of discrimination is seen as economically irrational because it allows personal antipathy to take primacy over the economic progress of the business.

The other form of discrimination could arise in a situation where the employer's decision is not necessarily economical irrational. Employers may discriminate intentionally because the applicant belong to a group that is thought to be less productive or more costly to employ (Reskin 2002). Statistical discrimination occurs when there is uncertainty and lack of information about the applicant's qualifications, or when an employer thinks that employing an applicant may have a negative impact on the business because of co-workers' or customers' prejudices (Phelps 1972). Moreover, statistical discrimination occurs when an employer attempts to reduce his or hers information costs by making inferences about the applicant's likely productivity based on statistical generalizations about the social group the applicant belong (Reskin 2002). Minority status may thus function as a signal, which the employer deduce imperfect information from (Spence 1973). When we consider that the subjects of my data set are mostly young and newly educated with little full-time work experience, there might be extra uncertainty regarding their productive potential (Wiborg 2006). An example of statistical discrimination of minorities is when an employer assumes that an applicant lacks skills such as fluency in the Norwegian language and knowledge of the Norwegian culture because of the individual's minority status. This type of discrimination may be prevalent in the Norwegian labour market. A qualitative study analysing interviews with 28 employers in the Norwegian labour market had two findings that points to the existence of statistical discrimination (Knechtel 2012: 132). For one, many employers were not aware of the existence of descendants of immigrants as potential job candidates. When asked about descendants of immigrants, it was common that they started talking about first generation immigrants. Secondly, many of the employers did not assume that individuals born in Norway to immigrant parents have equal language skills as native majority persons.

Because of statistical discrimination, descendants of immigrants may face tougher barriers to get employed compared to the majority population. Employers that seek to avoid risks will try to



avoid individuals with skill-sets they are uncertain about (Rogstad 2002). Risk averse employers will then favour the applicant whose productivity is least uncertain. In this case, a person with a Norwegian sounding name may indicate a better comprehension of the Norwegian language than a person with a foreign sounding name. Since the costs of gathering the relevant information from the pile of applicants in some cases are high, it might seem economically rational to leave out parts of the applications based on these group preconceptions.

Social cognition research has shown how discrimination can occur because of unconscious sex and race stereotyping which distorts our impressions of individuals based on group membership (Reskin 2002). Although conscious and deliberate discrimination may occur, an even more important reason for discriminatory practices is “automatic unconscious cognitive processes that distorts our perceptions and treatment of others.” They are normal information processes that bias our perceptions, evaluations and treatment of others because of characteristics that signal group membership (e.g. minority status and gender). Besides stereotyping, these processes include in-group preferences and attribution error. In-group preference is an automatic preference of in-group members to members of groups we have no or little affiliation with. Furthermore, we tend to remember the positive traits rather than the negative traits of in-group member, and we tend to assign positive attributes to them and trust them more often than out-group members. Attribution error springs from expectations, and occurs, for example when we give credit to the talent of a majority person for his success, while we attribute a minority person’s success to situational factors, such as outside help (Reskin 2002).

Stereotyping, in-group preference and attribution error are cognitively efficient for individuals, and frees up cognitive resources for other demanding purposes (Reskin 2002). These inclinations may, therefore, be adaptive to individuals, and especially those individuals who are juggling multiple demands. Although these processes often work subconsciously, the results of the actions may be pervasive. Over time, members of preferred groups, may accumulate advantages, while members of marginalized group accumulate disadvantages (for discussion about the effect of accumulating advantages, see DiPrete and Eirich 2006).

Why do we expect to find a discrimination effect in the Norwegian Labour market? The review of previous quantitative research gives us an equivocal impression of whether discrimination occurs for descendants of immigrants. On the one hand we see that descendants of immigrants as a group experience more difficulty to enter the labour market than the majority population, but on the other hand there is great heterogeneity within this group. We also see that some subgroups’ outcomes are the same as the majority population. The difficulty of establishing discrimination

effects is a methodological problem. In quantitative research the problem arises from not having all the right data. Since we don't have access to qualitative information of the hiring process, i.e. the reasoning and ad hoc perspectives of the employer, we can't tell whether the employment decision stem from discrimination or characteristics unobserved in the data set. In the quantitative tradition it is common to measure the mean gap between categories of individuals, and then try to isolate effects through controlling for a number of observable characteristics that we think will affect labour market success (Rogstad 2002). By comparing groups of workers with similar characteristics we investigate whether there is a wage gap that can't be explained by those factors (i.e. measures of formal qualifications and job experience).

If discrimination occurs against individuals of minority status we expect to see that descendants of immigrants score worse than the majority population on employment and the earnings trajectories. However, if we maintain that statistical discrimination comes from lack of information and uncertainty about the applicant's productivity and potential, it might be plausible that this type of discrimination cause more severe barriers in the entrance to the labour market than later in the career path. Once employment is secured and work experience accumulated, further promotions and job offers would be based on a more qualified view of worker's productivity. When employees have had the opportunity to show that they can do a good job, the risk of hiring minority employees is diminished. As a consequence, the earnings of minorities may improve in the longer term (Brekke 2006).

To sum up, theory of discrimination leads us to expect the opposite of the human capital theory hypotheses, which will function as the null hypotheses. Constructed from the discrimination perspective, I have formed these alternative hypotheses:

**H3:** *The probability to get employed the year after graduation is lower for descendants of immigrants than for the native majority with similar education.*

**H4:** *The earnings are lower for descendants of immigrants than for the native majority with similar education and job experience.*

### **3.3 Social network theory**

An alternative source of inequality in the labour market is unevenly distributed social networks. A social network is an important tool to manoeuvre the labour market to find a relevant job. While human capital theory and discrimination theory focus on the actions of employees and employers

respectively, social network theory explains the structural preconditions that are required for the successful matching of both sides of the labour market (Granovetter 1981). Flows of job-relevant information are mediated by social networks beyond strictly formal channels, and in the labour market, most economic behaviour are embedded in structures of social relations (Granovetter 1985).

Social network is an important asset to successfully gain access to the labour market. Granovetter's (1995) classic study draws attention to the importance of social networks as channels of information about job opportunities. The more information an individual has about relevant job openings, the better position he or she is in to get employed. Social networks are used to connect employers and employees and can be rewarding for both parties. For employers, social networks are used as a strategy to reduce risk by increasing their information about the prospective employee's qualities. These pieces of information are gathered from persons they know, and thus perceived more reliable than references from unknown persons (Stovel and Fountain 2010; Granovetter 1995). On the other hand, job seekers can take advantage of social networks as a channel to signal their skills and qualifications to prospective employers. If the job seeker succeed in conveying his or hers skills more clearly compared to his or hers competitors, he or she gains an advantage. Also, social networks may provide information about job openings to the job seeker that would not be available to him or her otherwise or that are not available to any job seeker outside the social network.

In Norway, Hansen (1997) has studied the prevalence of social networks in the employment process. Hansen found that nearly half of the job openings may have been filled through social networks. Among University graduates, another study found that 16% of the respondents reported to have found work through relatives and acquaintances (Try 2005). Furthermore, there are systematic differences among education groups in the prevalence of using social networks to gain employment (Try 2002). Together, these findings give evidence to the importance of social networks in the Norwegian labour market.

How might these social ties create a labour market bias in favour of majority population persons? The answer lies in how the networks are constructed. There are reasons to believe that social networks have inherent biases. Homophily is the principle that similarity breeds connection, which means that contact between similar people occurs more often than among dissimilar people (McPherson, Smith-Lovin, Cook 2001). There are several types of similarities - geographic similarity, cultural similarity, ethnic similarity, gender similarity, hobby similarity - and these similarities affect the make up of social networks. Homophily in social networks could therefore create unequal career opportunities between different national ancestry groups. The extent of

homophily should not be overstated though. A tendency towards social similarity in social networks does not mean entirely homogeneous groups, but is only an aggregate tendency (Bottero 2010: 170-171).

A closely related concept to homophily is differential association. Differential association is an essential feature of stratification (Bottero 2010: 4). People with different social resources, economic or cultural, tend to frequent in different social circles, have different life styles, and are therefore less likely to meet each other, and when they do, are less likely to have much in common. Differential association works thus as a conservative force on the distribution of opportunities and resources, in which social groups circulate resources within the group rather than across them.

Empirically, a rich body of international research has shown that social networks causes ethnic minorities to experience a labour market disadvantage compared to the majority population (e.g. Fernandez and Fernandez-Mateo 2006; Petersen, Saporta and Seidel 2005; Petersen, Saporta and Seidel 2000). However, I do not have the data available to add social network effects into my analytical models. As a consequence, when I measure the affect of national ancestry on labour market outcomes, a potential indirect effect which operates through social networks may occur. I will draw up a causal diagram where these effects are illustrated later in the chapter.

Granovetter (1973) makes the distinction between strong ties and weak ties. Strong ties are interpersonal relationships which are characterised by “the amount of time, the emotional intensity, the intimacy (mutual confiding) and the reciprocal services”, i.e. a group of people who are close, bonded and spend considerable time together. However, Granovetter argues that so-called “weak ties” are more potent than “strong ties” in gaining information about job openings. Weak ties are connections to people outside of the realm of close friendships, and may consist of former colleagues, acquaintances, friends of friends and so on. These connections serves as bridges that link individuals to other social circles and networks, and are thus tapping into the information pool of different social circles and attaining information one otherwise could not get hold of. The core of the argument is that persons who shares strong ties have overlapping information about the labour market, while weak ties is a source of non-overlapping information, giving both sides of the relationship bridge an opportunity to tap into job-related information they otherwise would not have access to.

As we have seen, a social network can be an important tool to get employed, and can thus be a factor in my first analysis, the probability of getting employed. Social networks may, however, also be a tool to increase earnings and general career mobility over time. There are two reasons for this. First, an employee can use job offers from other companies to negotiate higher earnings in the

present job. Conversely, when an employee knows less about outside job opportunities, there is less need for his or hers employer to pay higher wages to avoid turnover (Barth, Bratsberg and Raaum 2011). Alternatively, the employee with more information about his or hers opportunities in the market can move from job to job that pay the highest. Job mobility is therefore an important factor in increasing labour market returns, and can therefore be a factor in my second analysis (earnings) as well. As a result, social network may work both as an entrance to employment and as an engine to increase wages throughout an individual's work career.

To sum up, it is not unlikely that social networks differ between descendants of immigrants and the majority population. It may also differ between descendants of different national ancestry. However, it is not possible to separate discrimination effects and effects of social network with my data, and I will therefore combine the hypotheses of these two theories (as seen under).

### **3.4 Summary of theoretical perspectives**

In this section, I will briefly give a summary of the empirical expectations from the theoretical perspectives I have discussed in this chapter. Figure 3.1 is a causal diagram of the expected causes of labour market outcomes. As mentioned above, I will not be able to test the theories directly, except in part for human capital theory which serves as the basis for the following analyses. However, from the theories of discrimination and social networks I have derived hypotheses that I will test in the analyses. At the end of the section, I will give a brief introduction of the models from my analytical chapters.

#### **3.4.1 Hypotheses**

*Hypotheses derived from human capital theory:*

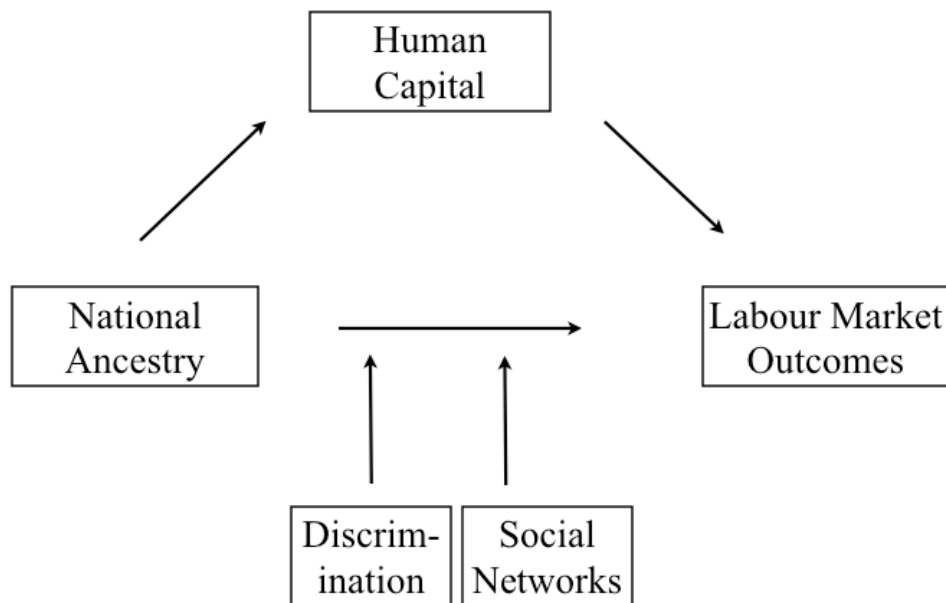
**H1:** The probability to get employed the year after graduation is the same for descendants of immigrants as for the majority population with similar education.

**H2:** The earnings are the same for descendants of immigrants as for the majority population with similar education and job experience.

*Hypotheses derived from discrimination theory and social network theory:*

**H3:** The probability to get employed the year after graduation is lower for descendants of immigrants than for the native majority with similar education.

**H4:** The earnings are lower for descendants of immigrants than for the native majority with similar education and job experience.



**Figure 3.1:** Model with empirical expectations.

### 3.5 Empirical design

The main focus is on the national ancestry and qualifications of the employee, and the relative returns of these qualifications. I keep a simple specification with similar variables in both analyses. The models in the analyses have a close resemblance to each other, having a three model structure, with the same control variables and explanatory variables. The difference lies in the outcome variable and job experience that is added to the earning analysis.

In chapter 6, I explore how national ancestry and education affect the probability of getting employed the year after graduation. The approach consists of three models. The first model measures the effect of national ancestry on employment probability, while holding a number of control variable constant. The second model introduce a detailed measure of education as control variables, and the third model contains dummy variables of four educational groups, with interaction variables for national ancestry and each educational group. With this design, I get to explore the effect education has on the differences between national ancestry groups.

In chapter 7, I explore how national ancestry, education and job experience affect early career earnings. As the first chapter of analysis, the approach consists of three models. In fact, the two approaches are nearly symmetrical. The first model measure the effect national ancestry and

job experience has on earnings. The second model adds a detailed measure of education as control variables, and the third model includes dummy variables for the same four educational groups, with interaction variables for national ancestry and each educational group.

Since women usually have lower labour market participation and earnings than men, I will conduct separate analysis for men and women. It will be of particular interest to explore sub-group differences in labour market integration between minority and majority groups within each gender, as well as general differences between men and women.

In the next chapter I will discuss further the methodological design of this thesis. I will also present the variables I will include in the models and discuss the statistical tools I will use to answer the research questions of this thesis.

## 4

### **Data and methods**

At the heart of any research lies the data and the methods employed to analyse it. This chapter will start by describing the data set and how the variables are operationalized. Some descriptive statistics will be included with the variable definitions. Subsequently, it will discuss the methodological design and the statistical tools used in the chapters of analysis. At the end of the chapter, there is a discussion of possible methodological complications with the study design, and a section on sensitivity testing.

#### **4.1 The data set**

The data set used in this thesis is provided by *DISCRIM: Measuring and Explaining discrimination in the labour market*. The project is supervised by Gunn Elisabeth Birkelund at the Department of Sociology and Human Geography, University of Oslo. Gathered and managed by Statistics Norway



(SSB), these individual level data contains information on a population-wide scale. The data is longitudinal, which means the variables have repeated observations.

I have done a number of exclusions in my data set. The data set only includes persons born in Norway with two Norwegian born parents or two foreign born parents. Persons born in Norway to one Norwegian born parent and one foreign born parent are thus not included in my sample. Neither are adopted persons who are not born in Norway, nor foreign born persons with Norwegian born parents. Furthermore, my data set only contains persons with a registered higher education in Norway between the start of 2000 until the end of 2009.<sup>43</sup> Moreover, persons who graduated outside the age frame of 20 years up to 35 years are excluded.

Compared to survey data, using administrative registers have several clear advantages. First, it remedies the problems of bias and non-representative sample selection in regular survey designs. Furthermore, the data set gives an extensive account of the entire population, which is of particular importance for me who analyse small subgroups of the population. In fact, a proper study of descendants of immigrants with higher education in the labor market would be very difficult with a regular survey design. The population is both too small and too diverse to be done justice to in sampled surveys. As Røed and Raaum (2003: 273) note, with register data even relatively small groups become large in absolute numbers. Moreover, when using register data, we avoid problems usually associated with survey data like people dropping out of the survey over time and selective reporting (Ringdal 2009: 140; Røed and Raaum 2003: 277).

However, one limitation of register data is the absence of any qualitative data which could provide additional information about the results of the analysis. The register data does not contain information about the attitudes, ambitions and values of the respondents. This absence represents a potential weakness in my study. The data does not provide information whether getting employed is a priority or not for the respondents in the data set. This ignorance obscures the difference between voluntary and involuntary unemployment.

I will analyse the data using the statistical software STATA 12.0.

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<sup>43</sup> Persons with the value 6 or 7 on the Norwegian Educational Classification Standard, which is higher education. PhD's are coded with the value 8 and are removed from my data set.

## 4.2 Operational definition of variables

### 4.2.1 Dependent variables

The dependent variables, or the outcome variables, are the measured effects of the analysis. The outcome variables in this study are employment status the year after graduation and annual earnings once employed.

***The employment status:*** is a categorical variable with the values 1 and 0. The variable indicates whether the person is employed or not. The variable is constructed using the variables occupation status, earnings and agreed working time. The threshold values on these three variables are meant to capture employment of some importance. To qualify as employment, a job has to have an agreed working time of 30 hours a week or more, and have annual earnings of more than 2 BA<sup>44</sup>. The constructed category thereby secures that the employment is substantial in both earnings and work hours, signifying a significant attachment to the labour market. Small part time jobs and jobs with low monetary returns will therefore not count as job experience or being employed in my analyses. However, using this threshold is somewhat arbitrary and the results could be sensitive to this choice. To measure the sensitivity, I will conduct sensitivity tests with different thresholds, which I will add in the appendix.

One problem with the analysis is what to do with graduates who continue higher education after graduation. The analysis captures the highest attained education within the observation period, but it is of course possible for a person to start a later education within the period without finishing it. There is a danger that this group is not random, but selected. For example, starting a new education could be the result of not gaining access to the labour market in the first place. There are no great solutions to this problem. My imperfect solution is to exclude the students who have lower earnings than 2 BA the year after graduation, while keeping the students who earned more. This strategy allows me to keep the persons who gained employment, but who study as well. For example, there could well be that some persons in the data set gained employment, but were then sent to take more education while being paid by the new employer. Furthermore, using this strategy, I avoid excluding persons who gained employment, but who choose to study part time in parallel with their job.

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<sup>44</sup> BA (“basic amount”) is a measure used by the Norwegian pension and social welfare system to assess a person’s eligibility for a wide variety of social security benefits. See Galloway (2009: 79-81) for a discussion of using BA as a threshold of labor market integration. In Norwegian: BA equals “Grunnbeløpet i Folketrygden”.

The table underneath shows the size of 1 BA and 2 BA in Norwegian kroners (NOK) from 2001 until 2010:<sup>45</sup>

Year	1 BA	2 BA
2001	51360	102 720
2002	54170	108340
2003	56861	113722
2004	58778	117556
2005	60699	121398
2006	62892	125784
2007	66812	133624
2008	70256	140512
2009	72881	145762
2010	75641	151282

**Earnings:** My second dependent variable is a measure of earnings. The variable is continuous and is measured from 2001 until 2010. Unlike the employment status, this variable counts everyone in the data set with registered earnings as employed. If, however, a persons is not registered with earnings for a year, that observation year will be excluded from the analyses.<sup>46</sup> Earnings are inflated to the level in the year 2010 in Norwegian kroner using the consumer price index.

The earnings variable's distribution shows that it does not meet the linear assumption which is a requirement for a linear regression. The earning distribution is skewed to the right, with several outliers and an uneven distribution of the residual. As I will discuss later in the chapter, these problems can be solved using natural logarithms.

The earnings variable used is less than optimal since it includes an array of social benefits. These include maternity and unemployment benefits, and from 2002, the variable also includes rehabilitation and disability benefits. From 2004, it includes a temporary disability pension. Qualification benefits are included from 2008, and lastly, from 2010, work assessment allowance is included as well.<sup>47</sup> It is not clear exactly how this could bias the results, and a more concrete measure should be used in future research.

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<sup>45</sup> From skatteetaten, see: <http://www.skatteetaten.no/en/Tabeller-og-satser/Grunnbelopet-i-folketrygden/> [Read: June 4, 2013].

<sup>46</sup> If a person after three years of employment and in his fourth year after graduation falls under this threshold (which is any registered earnings), and then in his fifth year after graduation meets the criteria again, the fifth year after graduation counts as his fourth year of labour market participation.

<sup>47</sup> Unfortunately, the discovery that the benefits were included in the variable came very late, and I had no time to arrange for a better measure before deadline.

It may, however, be reasonable to assume that these additions will not affect the results of the analyses to a great extent. The persons in the study are highly educated, young and in the beginning of their professional career, and thus not the typical demographic that usually receive most of these benefits.

For the purposes of this study, I will interpret the variable as earnings.

#### 4.2.2 Independent variables

The independent variables are the causes of the outcome variable. The independent variables are separated into two categories: explanatory variables and control variables. An explanatory variable is a variable I am interested in measuring the effect of, while I use control variables in the model to compare similar groups without being particularly interested in the degree they affect the outcomes. Except for job experience and year of earnings, which are used in the earnings analyses, all variables are premarket variables and are thus not directly affected by labour market mechanisms.

##### Explanatory variables

**National ancestry:** As mentioned in section 3.1, the dataset only comprises people born in Norway to either two foreign born parents or two Norwegian born parents. Persons born in Norway to one Norwegian and one foreign parent is not included in the data set, neither are the persons born abroad with two Norwegian born parents. If the person's parents are born in two different foreign countries, the birth country of the mother is reported. Furthermore, the analysis divides descendants of immigrants in two main brackets: those with parents born outside of Norway but within of one of the other 33 OECD countries (N=521), and those with parents born outside of an OECD country (N=2121).

**Education:** Only persons with higher education are included in my data set. These have the educational level value 6 or 7. Persons with the value 8 is excluded.<sup>48</sup> The education variables are created from the Norwegian NUS2000 categorization (Norwegian Standard, Classification of Education), which is a listing of every educational program in Norway, each identified with a six digit number. The standard has the following structure (SSB 2000: 7):

1st digit: Educational level (Nivå)

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<sup>48</sup> Persons with the value 8 are PhD graduates.

2nd digit: Broad field, educational type (Fagfelt)

2nd-3rd digit: Narrow field, field of education (Faggruppe)

2nd-4th digit: Detailed field<sup>49</sup>, educational group (Utdanningsgruppe)

1st-6th digit: Specific educational program (Enkeltutdanning)

I use the third level, field of education, as well as educational level in my analysis. Using the narrow field of education is a more detailed operationalisation than what have typically been used in previous immigrant literature.

**Gender:** The regressions are run separately for men and women. The data set contains 89,071 males (38.87%) and 140,076 females (61.13%), in total 229,147 persons.

**Job experience:** This variable measures the years of job experience after graduation. Years without registered earnings does not count as job experience. I also include a job experience squared term (job experience<sup>2</sup>).

**Interaction effects:** In model 3 of both my analyses, I include interaction terms. The interaction variables are made of national ancestry and education. The educational fields I use in the analyses are bachelor in Engineering, bachelor in Business, bachelor in Nursing and master in Medicine. The interaction variables are thus: national ancestry\*BA in Engineering, national ancestry\*BA in Business, national ancestry\*BA in Nursing and national ancestry\*MA in Medicine. I will include interaction terms for descendants of OECD immigrants and descendants of non-OECD immigrants in the analyses, but since the latter group is the main focus in the thesis, I will only present the results from for this group.

## Control variables

**Age at graduation:** This control variable is on a continuous scale from 20 to 35 years. I use information about the individuals' year of birth and their year of graduation to construct the variable age. To enable a curvilinear effect I include an age squared term (age<sup>2</sup>) in the analyses. I control for age because age at graduation may affect the probability of getting employed after graduation, as well as earning trajectories after gaining employment. Holding age constant is particularly

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<sup>49</sup> The categorization of specification levels as “broad, narrow and specific” is from UNESCO, see <http://www.uis.unesco.org/EDUCATION/Pages/international-standard-classification-of-education.aspx> [Read: June 4, 2013]

important in my study because there are group differences in age distribution between descendants of immigrants and the majority population.

***Year of graduation:*** I control for the year of graduation in all my models, because changes in the labour market may affect the probabilities of getting employed. This is especially important because the proportions between the minority groups and the majority group changes during the time of observation. In my data set, there is an increase in the proportion of descendants of immigrants graduated over the period. To control for graduation year I have created 10 dummy variables for each year in the observed time span (from the year of 2000 until 2009).

<b>Year</b>	<b>Freq.</b>	<b>Per cent</b>	<b>Cumulative</b>
2000	18,210	7.95	7.95
2001	18,879	8.24	16.19
2002	19,396	8.46	24.65
2003	20,756	9.06	33.71
2004	22,697	9.90	43.61
2005	21,806	9.52	53.13
2006	24,450	10.67	63.80
2007	24,656	10.76	74.56
2008	26,611	11.61	86.17
2009	31,686	13.83	100.00

***Semester:*** Since there are students in my sample graduating at every month of the year, all models have the dummy variable semester, which is coded 0 if a person graduates before July, and 1 if a person graduates after June. In my observation period 156,605 persons graduated in the first semester, while 72,542 persons graduated in the second.

***Year of earnings:*** I include 10 dummy variables in the earnings analysis, one for each year from 2001 to 2010. The year of earnings variables are included because labour market fluctuations could affect the earnings within the observed period.

### 4.3 Methods

Skog (2010: 41-45) proposes two ways of determining whether correlation is a product of a causal relation: the experimental method and the control variable method (also known as the standard regression method). The latter is frequently used in the social sciences in general and inequality studies in particular. The control variable method consists of comparing groups of respondents who

have the same value on one or more independent variables. The strategy is an attempt to compare like with like by adding independent variables to the regression model (Firebaugh 2008: 131-132). This understanding of causation has been branded “causation as robust dependence,” which is established through “the detection and elimination of spurious causal significance” (Goldthorpe 2007: 191-196).

In my first analysis I compare groups with the same gender, age at graduation, graduation year and similar education. The second analysis also includes work experience. This is an attempt to investigate whether national ancestry may affect labour market outcomes in ways that do not operate through these variables, i.e. cannot be explained by them. In other words, the strategy is to decompose the associations that create the outcomes, to eliminate nondiscriminatory explanations (Rogstad 2002: 19). However, to say that any unexplained gap between national ancestry groups is discrimination, is poor conclusion validity. And as I will discuss in section 4.5 this approach has some complications. One of them is that the act of discrimination is not made the subject of investigation. To the contrary, the approach is the opposite - to attach discrimination to the correlation that is not explained by the variables in the model. As a consequence, we still do not know whether the correlation is a product of discrimination or if it could be explained by other causes.

I will use multivariate binary logistic regression to answer my first research question and multivariate linear regression to answer my second. I will present these two analytical tools in the following, and afterwards, I will discuss some of the methodological complications that could arise from the regression method. I will end the chapter by discussing sensitivity testing.

## **4.4 Statistical tools**

### **4.4.1 Multivariate binary logistic regression**

My first research question is: *Do descendants of immigrants with higher education experience equal employment probabilities as majority peers with the same educational qualifications?* To answer this question, I will use logistic regression. This technique has advantages and possible problems that I will discuss in the following.

Logistic regression is suitable when the dependent variable is qualitative and dichotomous (Skog 2010: 351-352). As described in section 3.2, the outcome variable in this analysis measures whether a person was employed or not the year after graduation. I have given the value 1 to persons with employment, and 0 to persons without. Using linear regression is not common when the outcome variable has only two values, for three reasons (Mood 2010: 78; Skog 2010: 353; Tufte

2000: 13-16): One, the assumption about homoscedastic residual is not met, which may result in invalid standard error and thus unreliable significance tests. Two, with linear regression, we may predict outcome values below 0 and above 1, which would make little sense in my analysis. Three, linear models may give a misspecified functional form, since the relationship between X and Y can rarely be assumed to be linear when the outcome variable is binary.

However, not all the breaches are considered serious. On the one hand, reason number one can easily be corrected for and reason number two is also common in linear regression with non-binary outcome variables and is not a serious problem unless many of the predicted values fall below 0 or above 1 (Mood 2008: 78). On the other hand, reason number three is more critical. It may be that the misspecification of the functional form affects the coefficients in the models, thus making the results less accurate. An advantage of logistic regression lies in its S-formed curve, which is typical of dichotomous outcome variables (Skog 2010: 354). The change in Y because of changes in X is smallest at high and low values (Tufté 2000: 17). Put figuratively, at high and low levels the curve bends towards the “ceiling” and the “floor” (Skog 2010: 354).

In logistic regression, the predicated values of Y can be interpreted as probabilities and the coefficients can be interpreted as the effect of the independent variables on the probability that Y is 1 (Ringdal 2009: 407). The coefficient describes the changes in the average value of the outcome variable when the independent variable increases by one unit (Tufté 2000: 12).

The equation of the multiple logistic regression model is:

$$(1) \quad \text{Logit}(\tilde{Y}) = b_0 + b_1 \cdot x_1 + b_2 \cdot x_2$$

In the equation, Y is the dependent variable, which shows the logit to be employed the year after graduation. B(0) is the logit when all the independent variables have the value 0. B(1), b(2) are the values of the independent variables in the model.

The problem with logits is that they are not easy to interpret. In the coefficients we see whether the relationship is negative or positive, and we can test whether the difference is statistically significant. It is difficult to intuitively quantify the probability difference. However, this difficulty can be met by a three step process (Tufté 2000: 29):



1) Calculate log odds:

$$\ln\left(\frac{p}{1-p}\right) = b_0 + b_1 \cdot X_1 + \dots + b_n \cdot X_n$$

2) Subtract the antilogarithm of the negative log odds:

$$e^{-(b_0 + b_1 \cdot X_1 + \dots + b_n \cdot X_n)}$$

3) Estimate probability:

$$p = \frac{1}{1 + e^{-b_0 + b_1 \cdot X_1 + \dots + b_n \cdot X_n}}$$

#### 4.4.2 Multivariate linear regression

In the analysis of earnings in chapter 7, I use multivariate linear regression. With multivariate regression it is possible to elicit a comprehensive explanation of the variations in the dependent variables by including several sources which may affect the outcome (Skog 2010: 258-259). In addition, the method makes it possible to distinguish the particular affect one variable has on another by controlling for underlying or intervening variables that may confound the results (ibid.). However, as I discussed above, it is important to acknowledge that the data set does not contain all the information that may affect the outcome variables, and should therefore not be seen as an exhaustive account of what creates differences in labour market outcomes.

The second research question of my thesis is: *If employed, do descendants of immigrants with higher education experience equal earnings as majority peers with the same educational qualifications and work experience?* Unlike my first analysis, where I measure the probability of gaining employment, the outcome variable on my second analysis is continuous. Whereas it is common to use logistic regression when the outcome variable is categorical with few values (e.g. dichotomies), linear regression is commonly used when the outcome variable is continuous, such as earnings (Ringdal 2009: 361).

The equation of a multiple linear regression model is (Skog 2010: 261):

$$(2) \quad Y = b_0 + b_1 \cdot x_1 + b_2 \cdot x_2 + \dots + b_n \cdot x_n + \varepsilon$$

In the equation,  $b_k$  represent all the independent variables included in the model, and  $\varepsilon$  represent the residual, i.e. the effect of all non-observed causes of  $Y$ .

The linear regression model can thus make predictions. When we feed the model values for each independent variable, we can predict what the  $Y$ -value will be (Ringdal 2009: 368-370). If a person has the value 1 on each of the included variables in the model, we can add all the coefficients to the constant and predict the score of that person.

#### 4.4.3 Logarithmic transformation

The distribution of the earnings variable violates the linear assumption in linear regression models, because of its right skewed distributions, caused by some high values. The relationship between the explanatory variables and the outcome variable may not be linear. There are three possible solutions to this problem (Skog 2010: 240). The first solution is to make a nonlinear transformation of the outcome variable, like a logarithmic transformation. The second solution is to add square terms in the model, to control for curvilinear effects of an independent variable. The final solution is to use dummy variables in the model. I will therefore implement a logarithmic transformation of the earnings variable. After the transformation, the change in  $X$  gives  $Y$  a relative increase, not an absolute.

In the semi logarithmic model, the relative change in  $Y$  can be calculated with this equation:<sup>50</sup>

$$(3) \quad 100 \cdot (e^{(bx)} - 1)$$

#### 4.4.4 Hypothesis testing

The usage of statistical significance tests on population data has long been subject to debate (e.g. Cowger 1985; Rubin 1985; Cowger 1984). Two classical arguments in favor of using the test have been the “hypothetical universe of possibilities” argument and the “one never has a total population

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<sup>50</sup> However, when the coefficient is substantially lower than 1, it can be interpreted as a percentage change (i.e. 0.18 = 18 percent increase) (Skog 2010: 248).

anyway” argument. The significance test is a statistical tool used to infer knowledge about a population from statistics gained from a sample. The purpose is to find out whether sampling errors should be considered a likely source of difference between the hypothesized population parameter and a sample statistic. However, sampling error has no meaning in statistical inference apart from the assumption of randomness in the sample selection procedure (Cowger 1985). To test for statistical significance is to rule out sampling error, and if you have a total population, you cannot have sampling error, and consequently, sampling error cannot be an explanation for the sample statistic. Thus, for the two arguments to valid, they must carry the implicit assumption that the particular result observed was somehow randomly selected from some larger set of possible results.

Still, I will use statistical significance tests in my analyses. Statistical tests may be desirable in my research because register data are potentially subject to miss-measuring errors. The uncertainty of the analyses is not so much attached to the generalizability of the results to the population, because my sample contains all persons graduating higher education from 2000 until 2009, and born between 1965 and 1989. My study has therefore a high degree of reliability and validity.

Hypothesis testing answers the question of whether a correlation is statistical significant, which means that the result is not expected to be solely the product of chance (Ringdal 2009: 238). However, we should not consider statistical significance the same thing as substantial significance or scientific importance because statistical tests depend on sample size (Ziliak and McCloskey 1996). If we have a large sample it is generally easier to produce statistically significant estimates, than if we have a small one. The coefficients in both linear regression and logistic regression are constrained by statistical uncertainty (Skog 2010: 371). Student’s t-test is estimated by dividing the coefficient with the standard error:

$$(4) \quad t = \frac{b_1}{SE(b_1)}$$

To test for statistical significance, I will report the p-value of each estimate. The p-value reports the probability that the coefficient could occur without there being any association between the independent and the dependent variable. In other words, it reports the probability that the null hypothesis is correct.

We can estimate logistic regression with the Maximum Likelihood method. ‘Log Likelihood’ (-2LL) estimates how well the null hypothesis describe the data in my model. The difference between the -2LL score in the null hypothesis model and the model we have estimated is called “log likelihood ration” (LR) and is a measure of how much better our model is compared to the estimation of the null hypothesis. If we let -2LL(A) denote the value of my model and -2LL(0) denote the value of the null hypothesis model, LR could be described like this:

$$(5) \quad LR = (-2LL_0) - (-2LL_A)$$

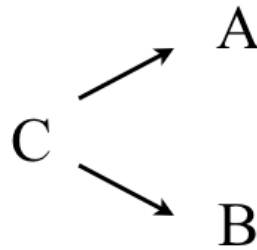
The model fit improves if -2LL decreases between the null hypothesis model and the alternative model.

#### **4.5 Methodological complications**

I have now described the methods and statistical tools I will use in my analysis. Next, I will discuss the complications that arise in a control method design when we try to infer causation. In fact, exposing causation is a notorious problem in social sciences. The problems can be categorized into two main brackets: confounding variables and endogenous selection bias. Put simply, the first problem arises because of omitted control variables and the second because of included control variables. In the following, I will use some time to discuss these complications attached to the use of the standard regression method, since they may affect the results of my analysis and should therefore be taken into account when I interpret the results.

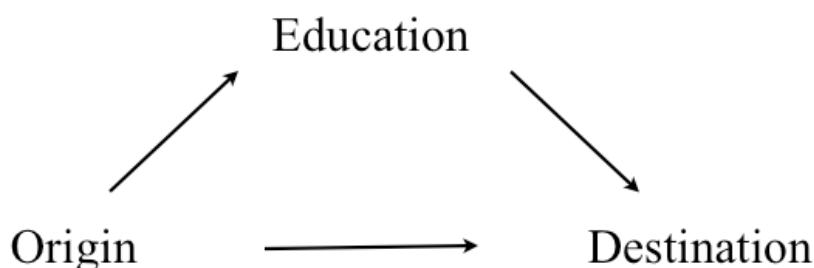
The first problem we meet is that we rarely know all the causes of Y, and even if we did, to gather information about all the causes may present a severe problem. The omitted variable bias occurs when the measured and unmeasured causes of Y are correlated with each other (Firebaugh 2008: 133). An omitted variable that is correlated with both the independent and outcome variable may create a spurious association between the two. As a result, the omitted variable causes a misestimation of the coefficient in the model. To illustrate this with an example, consider motivation, which is not controlled for in the analyses. Assume that national ancestry affect motivation positively and that motivation affect labour market outcomes positively too. Since I have not included motivation in my analyses, motivation would in this case confound my results. The confounding effect could create a positive relation between national ancestry and labour market outcomes that does not exist, or exaggerate this relationship. When I use the control variable

method, it is important to beware the danger of overlooking important confounding variables (Skog 2010: 44).



**Figure 4.1:** Association between A and B due to a common cause (confounding).

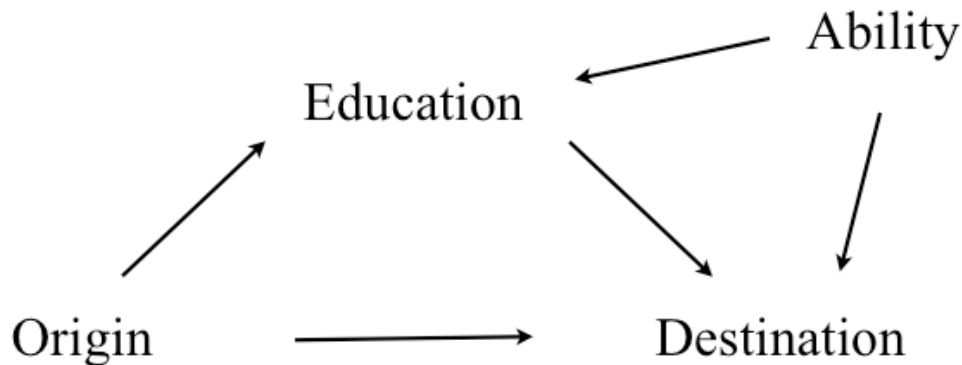
The second complication we come across with the control variable method is endogenous selection bias. Endogenous selection bias may occur when we control for a variable that we should not have controlled for (Elwert and Winship 2011; Morgan and Winship 2007: 129-136). In a sense, the problem could be considered the opposite of confounding. Take the case of colliding variables. To see how this problem could bias my results, consider the included variable education (E) and the omitted variable ability (A). My start off point is the OED (origin, education and destination) triangle (Blau and Duncan 1967), where origin (in my case national ancestry) affects destination (in my case labour market outcomes), both directly and indirectly through education. In other words, there are paths from  $O \rightarrow D$ ,  $O \rightarrow E$  and  $E \rightarrow D$ .



**Figure 4.2:** OED triangle (Blau and Duncan 1967)

When I control for education I block the path from O to E. Within the OED framework, what is left is the direct effect of origin on destination. However, a problem arise when A, the omitted variable, affects both E and D, making E a colliding variable, because  $O \rightarrow E \leftarrow A$ . When I control for the colliding variable (E) I may create an association between O and A that was not there earlier. Below,

I illustrate how controlling for a colliding variable opens up a path that was previously closed and thus affects the results.



**Figure 4.3:** Education as a colliding variable.

Assume that the associations between  $O \rightarrow E$ ,  $A \rightarrow E$  and  $A \rightarrow D$  are all positive.  $O$  is a dummy variable where 0=descendants of immigrants and 1=majority. Assume also that ability is equally distributed between the two categories of origin, which entails no association between  $O$  and  $A$ . The danger is that even though  $O$  and  $A$  are unrelated in the population, they may become related when the population is divided into persons with or without higher education. The association occurs because descendants of immigrants have a lower probability of obtaining higher education ( $O \rightarrow E$ ), and because higher ability persons have a higher probability of obtaining higher education ( $A \rightarrow E$ ). This would imply that only persons with the highest ability in the descendants of immigrant group achieve higher education, while a wider ability distribution of the native majority group achieve the same thing. In this example, descendants of immigrants with higher education would have a higher average ability score than native majority persons with higher education.

As we have seen, the problems of confounding and endogenous selection bias preclude me from concluding pure causal relationships between the independent and the outcome variable.

#### 4.6 Sensitivity testing

The operational definition of variables used in analyses tend to be somewhat arbitrary. By arbitrary, I mean that there are no theoretical foundations guiding exactly how the variables are defined. Take one of my outcome variables as an example. Why is the binary employment variable defined as 1 if a person has annual earnings of more than 2 BA and 30 hours or more of weekly agreed working

time? The reason I have given is that I am interested in capturing something more than a very loose attachment to the labour market. The person who gets a part time job delivering the newspaper or working at a grocery store the year after graduating higher education will likely not be categorized as “employed” in my analyses. The threshold, however, can be considered arbitrary - because why exactly that threshold? - and it begs the question of what the results would be if the threshold was set differently. Would the results be much different if only agreed working time was the threshold? Or on the contrary, since the subjects of my analyses are persons with higher education, perhaps the earnings threshold is set too low? If the job gained after graduation is relevant for the education the person has achieved, and if the person has been employed for several months that year, he or she should in most cases earn substantially more than 2 BA. So how would the results turn out if the threshold was 3 BA?

Answers to these questions are important and that is why tables with alternative threshold analyses are included in the appendices. The main focus of the thesis is on the chosen threshold, of course, but I will briefly report the results of the alternative analyses as well.

Another variable with a somewhat arbitrary operational definition is the independent variable national ancestry. I follow the OECD member countries and countries that are not members divide, except for Turkey and Chile. The reason for this decision is that Turkey and Chile have often been placed among the non-western countries in previous research, and, since my main focus in this thesis is descendants of non-OECD immigrants, I will benefit from making this category larger in the analyses. There are, however, possible that the transfer of these countries over to the non-OECD group have substantial effect on the analytical results. I will therefore include tables where I have done the analyses with a pure OECD and non-OECD divide in the appendices as well.

In the next chapter, I will present descriptive statistics from my data set.

## 5

### **Descriptive statistics**

This chapter presents the main features of the data used in the following analyses (Chapter 6 and Chapter 7). The data set contains information about all persons born in Norway between 1965 and 1989 who have graduated from a higher education in Norway in the period between 2000 and 2009.

Table 5.1 is a presentation of mean values and distributions on the variables education, age of graduation and employment percentages with different thresholds. Table 5.2 shows country specific statistics of the biggest groups in the data set. In both tables, the numbers are divided into six categories: men and women are separated, and in turn divided into the subgroups majority, descendants of immigrants born in a country within the OECD, and descendants of immigrants born in a country outside the OECD (non-OECD). The primary focus of this interpretation will be on the similarities and the dissimilarities between majority and descendants of a non-OECD origin.

Inspecting Table 5.1, it is important to notice the uneven sizes of the subgroups. While the majority sample is large, the other two subgroups are comparably small. Also, the number of



persons with parents born outside the OECD is about four times as big as the subgroup with parents born inside the OECD. If we look at gender, we see that women in the data set outnumber men in all categories. This trend is especially prevalent in the majority population where majority women outnumber majority men by over 50%.

Comparing education distribution, we see that some educations have a considerable gender asymmetry and others have an asymmetry between national ancestries. On the one hand, non-OECD descendants are overrepresented in the group with a medical degree. For both women and men the relative portion with a medical degree is over five times as large for non-OECD descendants compared to the majority. On the other hand, men of all three ancestry groups have a high portion of engineers, outnumbering women greatly. Nursing is different in that women have substantially higher rates than men, but within the female category, the proportion of the majority with a nursing education more than double the other two. In many of the variables displayed in Table 5.1, OECD descendants have a mean score somewhere between that of the majority and the non-OECD descendants.

*Table 5.1: Descendants of immigrants and native majority persons. Descriptive statistics by national ancestry and gender; (N=229 147).*

<b>National ancestry category</b>	<b>Men</b>			<b>Women</b>		
	Majority	OECD	Non-OECD	Majority	OECD	Non-OECD
<i>Category of education (%)</i>						
Medicine	1,8	4,2	10,9	1,7	6,3	10,8
Nursing	3,3	1,2	2	18	8,4	6,2
BA Business	11,9	11,8	18,1	7,1	7,7	12,5
BA Engineering	15,6	11	17,1	2,3	2,4	6,3
Others	67,4	71,8	51,9	70,9	75,2	64,2
<i>Age (Min 20 - Max 35)</i>						
Mean age graduation	26,4	26	24,5	26,1	25,5	24,3
Variation (Std. Dev.)	3,1	3,3	2,4	3,4	3	2,4
<i>Employed by thresholds (%)</i>						
4+ hours a week	87,8	76,6	79,8	88,9	74,3	80,5
30+ hours a week	71,3	60,5	59	62,6	52,9	54,5
30+ hours and 1 BA	58,5	49,5	46,1	52,1	41	44,4
30+ hours and 2 BA	50,8	43,6	39,4	45,9	36,14	36,9
30+ hours and 3 BA	41,6	36	30,7	39,9	30,5	31,7
<b>N Individuals</b>	87 936	236	899	138 569	285	1222

The mean age of graduation doesn't differ to a large degree between the groups, but there is some dissimilarity. The diverseness is both between gender and national ancestry. Women tend to be a bit younger when they are graduating, but the gender differences are very small.<sup>51</sup> Male and female non-OECD descendants graduate at average about two years before majority men and women. Looking at the standard deviation we see that descendants of non-OECD origin have a smaller variance than the other two national ancestry subgroups. The smaller variance means that this group has smaller within-group age difference in the year of graduation.

Looking at employment percentages the year after graduation with different thresholds, we see that majority persons get employed more than the foreign national ancestry groups. The pattern is consistent for all thresholds. Moreover, the employment percentage gap is strikingly similar in size over all levels. The gap between the native majority and descendants of non-OECD immigrants lie around 10%. As for gender, women are less employed the year after graduation than men for all thresholds except for the first, in which both native majority women and female descendants of non-OECD immigrants score higher than men. Figure 5.1 is a visual presentation of the employment percentages for the threshold 30+ hours of agreed working time and annual earnings of 2 BA or more. From the figure, we can see that for both gender, native majority persons have higher employment frequencies than descendants of immigrants.

In Table 5.2, we see the country specific statistics. The statistics present the makeup of the categorizations, which countries lies behind the analytic groups. In the non-OECD category, we see that Pakistan is the largest group with 834 persons. They are by themselves larger than the whole OECD group, and almost three times as big as the second largest non-OECD country, which is India with 301 persons. The third largest group is Vietnam with 284 persons.

As for continent, the major countries in the non-OECD category are Asian, except for Morocco, Chile and Turkey. In the OECD category, only China and USA lie outside of Europe.

The employment percentages are very similar for male descendants of OECD and non-OECD immigrants. 36% of male descendants of OECD immigrants are employed the year after graduation, whereas 37% of male descendants of non-OECD immigrants are employed. The difference is small for female descendants of immigrants too. Only native majority men have an employment percentage over 50. Perhaps surprisingly, considering research in other European countries, one national group that stands out in the statistics is Morocco, with 27 out of 54 women and 11 out of 27 men employed the year after graduation. 50% employment the year after

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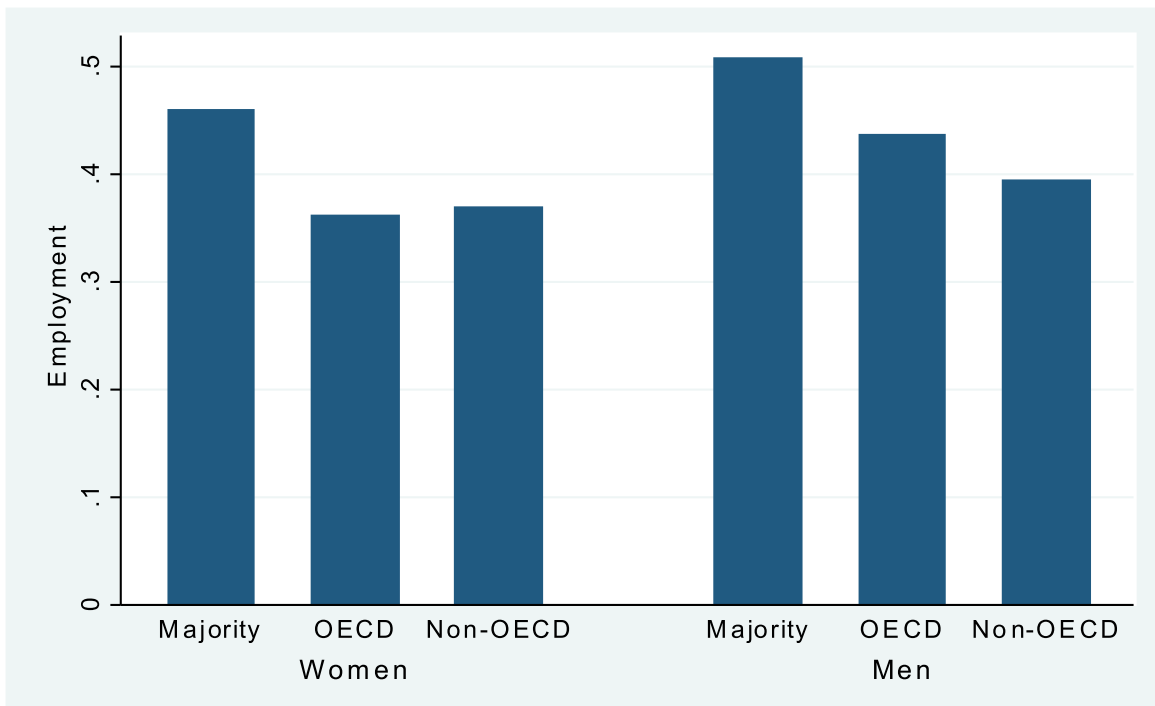
<sup>51</sup> Within higher education, men tend to take longer degrees than women, which could explain the age difference.

Table 5.2: Descendants of immigrants. Country specific statistics.

	Female		Male		Total
	Employed	Not Employed	Employed	Not Employed	
<b>National ancestry</b>					
<i>OECD Category</i>					
USA	4	12	2	6	24
China	6	12	3	9	30
Germany	8	12	7	13	40
Polen	13	24	16	18	71
Great Britain	9	14	14	18	55
Netherlands	7	22	13	16	58
Sweden	8	21	4	14	47
Iceland	9	6	0	3	18
Finland	11	9	7	5	32
Denmark	17	38	20	11	86
Croatia	9	12	2	5	28
Other	2	0	15	15	32
Total	<b>103</b>	<b>182</b>	<b>103</b>	<b>133</b>	521
Percent (%)	<b>36</b>	<b>64</b>	<b>44</b>	<b>56</b>	
<i>Non-OECD Category</i>					
Pakistan	168	301	154	211	834
Vietnam	55	96	45	89	285
India	66	107	50	78	301
Hongkong	6	10	4	13	33
Philippines	11	25	12	18	66
Marocco	27	27	11	16	81
Sri Lanka	12	20	6	15	53
Turkey	28	43	17	21	109
Chile	4	12	4	8	28
Other	74	130	52	75	331
Total	<b>451</b>	<b>771</b>	<b>355</b>	<b>544</b>	2121
Percent (%)	<b>37</b>	<b>63</b>	<b>39</b>	<b>61</b>	
<b>Majority</b>					
Total	<b>63 660</b>	<b>74 909</b>	<b>44 703</b>	<b>43 233</b>	226 505
Percent (%)	<b>46</b>	<b>54</b>	<b>51</b>	<b>49</b>	

**Notes:** The table shows employment frequency the year after graduation. The threshold for employment is 2 BA of annual earnings and 30 hours of agreed weekly working hours.

Figure 5.1. Descendants of immigrants and native majority persons. Percentage employed the year after graduation.



**Note:** Employment is measured with a threshold of 30 hours of agreed weekly work and annual earnings of 2 BA.

graduation for descendants of Moroccan immigrants is a higher percentage than native majority women.

We can in Table 5.3 and Table 5.4 see the means and standard deviations by national ancestry and gender. The main tendency is that earnings increase with work experience, which is consistent with human capital theory. Furthermore, women have consistently higher earnings than men for all three national ancestry groups. The gender gap holds through time as well. Table 5.2 shows that male descendants of OECD immigrants in the data set have higher earnings than native majority men and male descendants of non-OECD immigrants. The earnings gap is consistent through time, from one year to eight years of work experience. The earnings difference between the other two groups are very small throughout the period, and we can see that male descendants of non-OECD immigrants start out making less than native majority men. However, after 8 years of work experience, they have closed the gap and start making more. Table 5.3 shows the descriptive statistics for women. In this table, the pattern is that native majority women consistently earn more than descendants of OECD and non-OECD immigrants. For a visual presentation, Figure 5.2 and 5.3 show the earnings development from one to ten years of employment for men and women.

Figure 5.2: Descendants of immigrants and native majority persons:  
Annual earnings development, per year of work experience. Men.

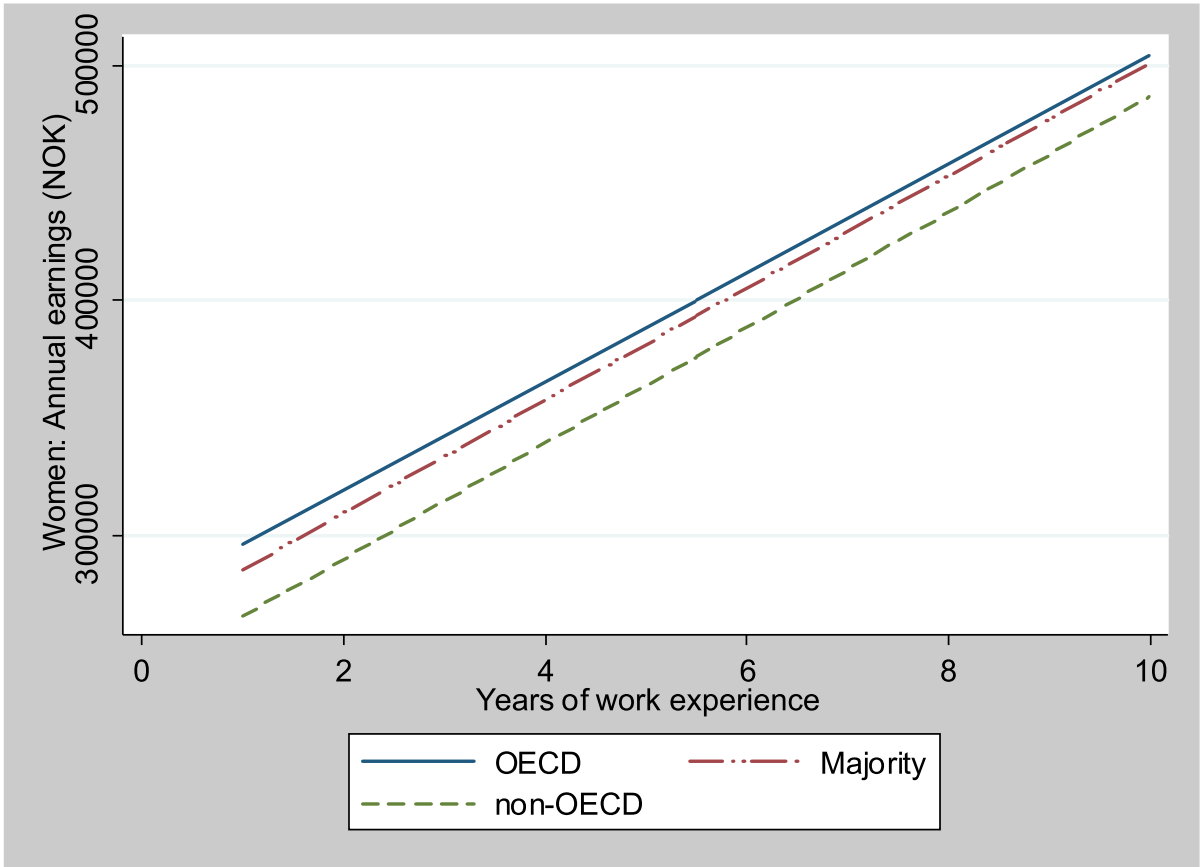
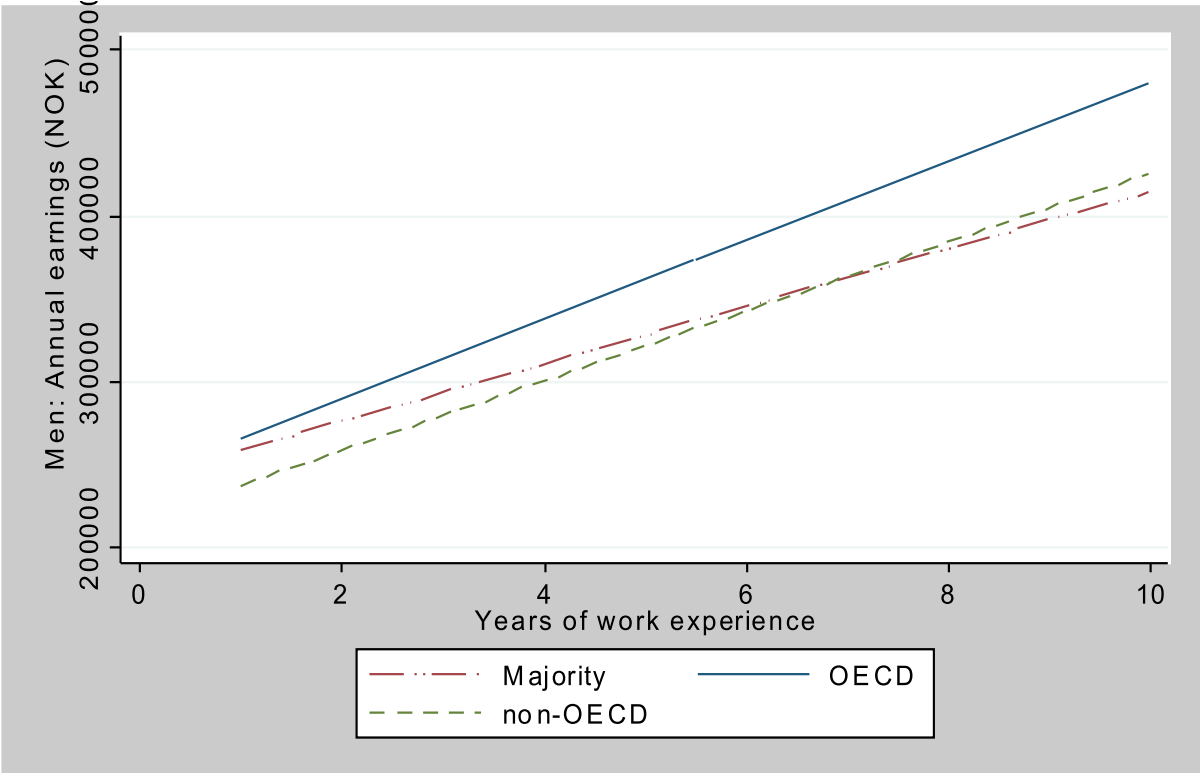


Figure 5.3: Descendants of immigrants and native majority persons:  
Annual earnings development, per year of work experience. Women.

Table 5.3: Earnings. Descriptive statistics for descendants of immigrants and native majority persons. Men.

National ancestry	Men					
	Majority	St. dev.	OECD	St. dev.	Non-OECD	St. dev.
Annual earnings in NOK (mean)						
First year of employment	<b>251 558</b>	<i>159 234</i>	<b>262 813</b>	<i>170 640</i>	<b>232 772</b>	<i>174 587</i>
Second year of employment	<b>277 187</b>	<i>161 170</i>	<b>285 754</b>	<i>169 242</i>	<b>261 179</b>	<i>157 103</i>
Third year of employment	<b>297 894</b>	<i>165 061</i>	<b>317 871</b>	<i>167 205</i>	<b>282 213</b>	<i>162 946</i>
Fourth year of employment	<b>315 793</b>	<i>171 339</i>	<b>329 739</b>	<i>169 968</i>	<b>305 697</b>	<i>161 357</i>
Fifth year of employment	<b>332 534</b>	<i>181 968</i>	<b>369 568</b>	<i>180 629</i>	<b>324 507</b>	<i>171 460</i>
Sixth year of employment	<b>348 560</b>	<i>203 291</i>	<b>413 425</b>	<i>192 817</i>	<b>335 565</b>	<i>163 080</i>
Seventh year of employment	<b>363 118</b>	<i>206 790</i>	<b>433 580</b>	<i>200 988</i>	<b>356 772</b>	<i>159 164</i>
Eight year of employment	<b>375 111</b>	<i>195 622</i>	<b>421 641</b>	<i>182 222</i>	<b>382 371</b>	<i>179 991</i>

**Notes:** All earnings inflated to 2010 earnings using the consumer price index.

Table 5.4: Earnings. Descriptive statistics for descendants of immigrants and native majority persons. Women.

National ancestry	Women					
	Majority	St. dev.	OECD	St. dev.	Non-OECD	St. dev.
Annual earnings in NOK (mean)						
First year of employment	<b>289 882</b>	<i>192 468</i>	<b>271 061</b>	<i>163 279</i>	<b>261 206</b>	<i>171 891</i>
Second year of employment	<b>319 126</b>	<i>200 184</i>	<b>311 088</b>	<i>181 931</i>	<b>294 676</b>	<i>184 607</i>
Third year of employment	<b>346 465</b>	<i>211 761</i>	<b>345 890</b>	<i>195 390</i>	<b>319 366</b>	<i>191 638</i>
Fourth year of employment	<b>370 461</b>	<i>216 628</i>	<b>365 777</b>	<i>174 938</i>	<b>336 553</b>	<i>199 041</i>
Fifth year of employment	<b>394 681</b>	<i>233 490</i>	<b>391 774</b>	<i>194 656</i>	<b>367 068</b>	<i>204 578</i>
Sixth year of employment	<b>416 199</b>	<i>234 586</i>	<b>441 008</b>	<i>235 994</i>	<b>380 725</b>	<i>200 511</i>
Seventh year of employment	<b>437 574</b>	<i>260 365</i>	<b>421 907</b>	<i>212 346</i>	<b>417 686</b>	<i>217 925</i>
Eight year of employment	<b>453 585</b>	<i>263 854</i>	<b>412 998</b>	<i>200 603</i>	<b>413 516</b>	<i>208 338</i>

**Notes:** All earnings inflated to 2010 earnings using the consumer price index.

In summary, Table 5.1 shows some heterogeneity in educational choices both between men and women and between the subgroups of national ancestry. Except for Medicine and perhaps Business, the difference between the gender is greater than between the national ancestry subgroups. The native majority has higher employment percentages than descendants of immigrants, and within

each national ancestry group, men generally have higher employment percentages than women. Table 5.2 shows the country specific statistics. We see that the descendants of immigrants category are made up of many countries, in which Pakistan is by far the largest. Furthermore, descendants of non-OECD immigrants are four times as many as descendants of OECD immigrants. Figure 5.1 is a graphic presentation in which we can see that the probability to be employed the year after graduation is higher for native majority persons than for descendants of immigrants, for both genders. Table 5.3 and Table 5.4 show that earnings increase with labour market experience. There are earnings differences across national ancestry groups, but they are not very large. Figure 5.2 and 5.3 show the earnings development patterns from the tables.

The next two chapters will present the results of the analyses, test the hypotheses and give answers to the research questions of the thesis.

## 6

### **Employment**

In this chapter, I will look at the transition between graduation and employment. I will investigate whether the children of immigrants have the same probability to enter the labor market as the majority population. As discussed in chapter 3, inequality could stem from an unequal qualification distribution, differences in access to social networks or employer discrimination. The analysis is an attempt to answer the first research question of my thesis: Do descendants of immigrants with higher education have the same probability of being employed after graduation as their majority peers with similar educational qualifications? As the question suggest, educational qualification will have a key role in the analysis. In line with human capital theory, a person's education affects his or hers prospects of gaining employment.

The hypotheses that will be tested in the analyses are H1 and H3:



**H1:** The probability to get employed the year after graduation is the same for descendants of immigrants as for the majority population with similar education.

**H3:** The probability to get employed the year after graduation is lower for descendants of immigrants than for the native majority with similar education.

This chapter and the next should be seen in context with each other. While this analysis focus on the entry to the labour market, the next chapter focus on the earnings of the persons who managed to get employed. Consequently, this chapter provides important complementary information to the next about the persons who enter the labour market.

The analysis will be done separately for men and women. Table 6.1 and Table 6.2 report whether descendants of immigrants have the same probabilities as the native majority to be employed the year after graduation. The native majority is the reference category that OECD and non-OECD descendants are compared to. Parameter estimates of three models are presented in both tables. A positive estimate in a model indicates a higher probability of being employed than the reference group, and contrary, a negative estimate indicates a lower probability. Model 1 is the baseline model with national ancestry as the predictor variable and with control variables for age at graduation, age at graduation squared, year of graduation and semester of graduation. In Model 2, I include fixed effects for education. This strategy works by creating a dummy variable for each educational group and apply them to the model.

In Model 3, I include interaction terms between national ancestry and educational qualifications, for both OECD and non-OECD descendants. Since my main focus in this analysis is on the descendants of non-OECD immigrants, however, I will only show the results of the latter in the tables. Although the results are not shown, the inclusion of the OECD group in the analysis is necessary because it affects the reference category. If the OECD interaction terms had not been put in the model, the education parameter would be a mixed category of descendants of OECD immigrants along with the majority population.

As a last note, I include significance testing of each parameter in the models. It has, however, been debated whether this is necessary when analyzing population data. In the next two sections, I will be careful to be repetitive so that the two sections could be read separately. I will start by introducing the results from the analysis of women and will go on to present the men.

## 6.1 Women

Table 6.1 is a distilled presentation of the results from the three models I have conducted. The table reports the separated analysis I have done for women. Control variables are not shown in the table. Being employed is coded as 1, not being employed is coded 0.<sup>52</sup> Positive parameter estimates means higher probabilities of that group to get employed the year after graduation. The national ancestry reference category is the native majority population, which means that the parameters must be seen in relation to this category.

Model 1 is the baseline model where I introduce the explanatory variable national ancestry along with the control variables semester, year of graduation, age at graduation, age squared and master or bachelor. In Model 2, I add fixed effect for education (not shown in the table). The fixed effect is dummy variables of every education group. In Model 3 I introduce four education groups and add interaction terms for the education variables and non-OECD national ancestry.

Looking at Model 1, we see that both national ancestry parameters are negative, -0.145 ( $p < 0.05$ ) for non-OECD descendants and -0.423 ( $p < 0.01$ ) for OECD descendants. Both parameters are statistically significant. This means that the probability of being employed the year after graduation for both national ancestry groups is lower compared to the native majority group. Perhaps surprisingly, the probability of being employed is lower for descendants of an OECD origin than for descendants of non-OECD origin.

Model 2 includes fixed effect for education. As we can see, the lower probabilities of descendants of immigrants to be employed are maintained. For persons of a non-OECD origin the parameter is -0.261 ( $p < 0.001$ ), and for persons with an OECD origin the parameter is -0.406 ( $p < 0.01$ ). As we can see, after including education, descendants with an OECD origin is still the group with the lowest probabilities of being employed the year after graduation.

Turning to Model 3, we see again that the employment probability gap withholds. The same pattern presents itself, the native majority group has the highest probability of being employed, followed by persons of a non-OECD origin and then persons of an OECD origin. The reference category is a majority person with a higher education diploma which is not among the four educations in the model; Nursing, Business, Engineering and Medicine.

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<sup>52</sup> It is important to note that employment has a relative strict definition, in which not every job meets the requirements. See Chapter 4 for more information.

Table 6.1: Binary logit models of employment for descendants of immigrants: Women.

Model	1	2	3
<b>National ancestry</b>			
Majority population	ref. category	ref. category	ref. category
Non-OECD	-0.145*	-0.261***	-0.240**
	0.064	0.066	0.080
OECD	-0.423**	-0.406**	-0.586***
	0.129	0.133	0.146
<b>Education</b>			
BA Engineer			0.162***
			0.040
BA Business			0.292***
			0.023
Nursing			-0.477***
			0.015
Medicine			0.266***
			0.0456
<b>Interaction terms</b>			
BA Engineer x non-OECD			0.218 (ns)
			0.303
BA Business x non-OECD			-0.195 (ns)
			0.212
Nursing x non-OECD			0.386 (ns)
			0.280
Medicine x non-OECD			-0.205 (ns)
			0.207
-2LL (df)	85,193.837 (4)	82,602.244 (5)	84,482.312 (4)
-2LL Change	-	2,591.593***	-1,880.068***
Pseudo R <sub>2</sub>	0.029	0.058	0.037
N	126,606	126,604	126,606

**Notes:** ns  $p > 0.05$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . The control variables semester, year of graduation, age at graduation and age at graduation squared are included in the models but not shown in the table. Fixed effects for education is used in Model 2. Also, interaction terms for descendants of OECD immigrants and education are included in the model, but not shown in the table. Neither is statistically significant.

Table 6.2: Binary logit models of employment for descendants of immigrants: Men.

Model	1	2	3
<b>National ancestry</b>			
Majority population	ref. category	ref. category	ref. category
Non-OECD	-0.185*	-0.209**	0.240*
	0.076	0.077	0.104
OECD	-0.223 (ns)	-0.203 (ns)	-0.201 (ns)
	0.138	0.148	0.165
<b>Education</b>			
BA Engineer			0.187***
			0.022
BA Business			0.107***
			0.023
Nursing			-0.308***
			0.039
Medicine			-0.059 (ns)
			0.053
<b>Interaction terms</b>			
BA Engineer x non-OECD			0.181 (ns)
			0.227
BA Business x non-OECD			0.313 (ns)
			0.213
Nursing x non-OECD			0.778 (ns)
			0.507
Medicine x non-OECD			-0.340 (ns)
			0.251
-2LL (df)	-51,666.039 (4)	-50,438.729 (5)	-51,578.871 (4)
-2LL Change (Sig.)	-	-1,277.31***	1140,142***
Pseudo R <sub>2</sub>	0.030	0.053	0.032
N	78,231	78,220	78,231

**Notes:** ns  $p > 0.05$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . The control variables semester, year of graduation, age at graduation and age at graduation squared are included in the models but not shown in the table. Fixed effects for education is used in Model 2. Also, interaction terms for descendants of OECD immigrants and education are included in the model, but not shown in the table. Neither is statistically significant.

Looking at the parameters of the four educations, we see that native majority graduates with Engineering (0.162,  $p < 0.001$ ) and Business (0.292,  $p < 0.001$ ) education have a higher probability of being employed than the reference category, while the parameter of Nursing is negative (-0.477,  $p < 0.001$ ), signifying a lower probability of being employed compared to the reference category. The reference category is a constructed mean average of all female majority persons in the sample except those graduates of the included educations in the model. The Medicine variable is not statistically significant (-0.266,  $p > 0.001$ ).

The interaction terms must be seen in relation with these education variables. The interaction terms compares graduates of a non-OECD origin with native majority graduates from the same education. A positive parameter for the BA Engineer \* non-OECD variable means that descendants of a non-OECD origin have a higher probability to be employed a year after graduation than their native majority peers (with the same education). However, as we can see, this parameter is not statistically significant (0.218,  $p > 0.05$ ). The same is the case for the rest of the interaction terms.

## 6.2 Men

The analysis of men's probability of being employed a year after graduation is shown in Table 6.2. The models are identical to the ones presented for women in Table 6.1, and as in Table 6.1, the control variables are not shown.

The parameters in Model 1 show the same relative relationship between descendants of immigrants and the native majority as Table 6.1. Both descendants of a non-OECD origin and an OECD origin have a lower probability of being employed compared to the majority group. Furthermore, descendants of OECD immigrants have a lower probability of being employed than descendants of non-OECD immigrants. However, even though the parameter for descendants of OECD immigrants is larger than for descendants of non-OECD immigrants, the parameter is not statistically significant. The parameter for descendants of non-OECD immigrants is -0.185 ( $p < 0.05$ ) and the parameter for descendants of OECD immigrants is -0.223 ( $p > 0.05$ ). Interestingly, for descendants of non-OECD immigrants, the gap up to the majority is larger for men than for women.

As in Table 6.1, Model 2 includes fixed effects on education. Contrary to the findings in Table 6.1, we see that for descendants of OECD immigrants there is no statistical significant difference in employment probability compared to the reference category (-0.203,  $p > 0.05$ ), whereas for descendants of non-OECD immigrants there still is a significant difference, on a 1 per cent significance level (-0.209,  $p < 0.01$ ).

Model 3 includes the four educational fields Engineer, Business, Nursing and Medicine. All education parameters are statistically significant, except Medicine. Engineering and Business have positive parameters, which mean that majority persons with these educations are more likely to be employed the year after graduation than the reference category. The reference category is a constructed mean average of all male majority persons in the sample except those graduates of the included educations in the model. The parameter for Engineer graduates is 0.181 ( $p < 0.001$ ), while the parameter for Business graduates is 0.107 ( $p < 0.001$ ). Contrary, for the health educations, Medicine and Nursing, the parameters are negative. The parameter for Nursing graduates is -0.308 ( $p < 0.001$ ), and the parameter for Medicine graduates is -0.059 ( $p > 0.05$ ).

Turning to the interaction terms, we see, as in Table 6.1, that neither of the parameters are statistically significant. This means that in my data there is no statistically significant difference in employment probability between descendants of non-OECD immigrants and native majority persons within the four educational fields. This may be due to small group sizes within each category. It is worth noting, however, that for three of the educational fields the parameter is positive, while the parameter for Medicine is negative.

### 6.3 Summary

I have now presented the main content of the two tables of the first analysis. In this section I will recapitulate and discuss some of the findings. A further discussion will take place in Chapter 8. This chapter has been an attempt to answer the first research question: *Do descendants of immigrants have a lower probability of getting employed the year after graduation compared to the native majority?* The empirical analyses show that descendants of immigrants, both OECD and non-OECD, have a lower predicted probability of getting employed. However, the employment gap seems to be complex. For male descendants of OECD immigrants there are no statistically significant parameters. This means that there are no statistically significant difference between descendants of OECD immigrants and the native majority to be employed the year after graduation when education and other variables are controlled for. For the other groups, male and female descendants of non-OECD immigrants and female descendants of OECD immigrants, there are still statistically significant gaps to the native majority. All parameters are negative, except for male descendants of non-OECD immigrants in Model 3.

Turning to employment gaps in specific educational fields, I find no statistically significant difference for either field or gender. It is, however, important to note that the statistical significance measure is influenced by group size. Since statistical significance is calculated by the parameter

estimate and the standard error, small groups make it harder to establish significance. As discussed in Chapter 4, there is also dispute about whether significance testing is necessary when analysing population data. With that discussion in mind, it may be worthwhile noting that for both female and male Medicine graduates, the probability of getting employed the year after graduation is lower for descendants of non-OECD immigrant than for the native majority. This pattern occurs among female Business graduates as well. For all other groups, the probability of getting employed favours descendants of non-OECD immigrants.

Taken together, the results of the analyses in this chapter gives support to Hypthesis 3: The probability to get employed the year after graduation is lower for descendants of immigrants than for the native majority with similar education. The hypothesis is derived from discrimination and social network theory, and the results indicate the possibility that disparate access to job-relevant social networks and/or discriminatory treatment of descendants of immigrants cause the between-group gap.

The results give thus little support to Hypothesis 1: *The probability to get employed the year after graduation is the same for descendants of immigrants as for the majority population with similar education.* The hypothesis is derived from human capital theory, but the results should not be interpreted as evidence against the *theory*, or a falsification of it, especially since my data set only contains persons with higher education. Rather, the results should be interpreted as evidence that there are other factors that affect labour market outcomes than human capital.

However, it should be noted that the pseudo R-squared reported in the tables are very low. This may in part be because the persons in the analyses are already selected on higher education.

I will in the next chapter follow the careers of the persons who managed the transition from graduation to employment and analyse their earnings during those first years in the labour market.

## 7

### Earnings

Last chapter presented the results of the employment analysis. The analysis found that descendants of immigrants have a lower probability of attaining employment the year after graduation compared to the native majority, but that this might not be true for all educations. This chapter examines the further careers of those who entered the labour market.

This chapter attempts to answer the second research question of this thesis: *If employed, do descendants of immigrants with higher education experience equal earnings as majority peers with the same educational qualifications and work experience?* Before presenting the tables, it is important note and underline precisely what this analysis measures and the implications the measurement has for the results. In the last analysis, there was a threshold for employment. In these analyses all persons with earnings are put into the models. Consequently, this chapter is an investigation of earnings among persons with any paid attachment to the labour market.

The hypotheses that will be tested in the analyses in this chapter are H2 and H4:



**H2:** The earnings are the same for descendants of immigrants as for the majority population with similar education and job experience.

**H4:** The earnings is lower for descendants of immigrants than for the native majority with similar education and job experience.

The results are presented in Table 7.1 and Table 7.2. The coefficients report the comparative log earnings of descendants of immigrants and the native majority population. As in Chapter 6, the analysis is conducted in three models, or three steps. The independent variables in these two chapters almost mirror each other, with the exception of a few added variables in the analysis of this chapter. I have added 10 dummy control variables for earnings year in all three models, which keep the count of which year the earnings were earned. These variables are not included because of inflation, which is already calculated for, but because the average earnings in Norway have increased during the 10 years of observation.<sup>53</sup> Furthermore, I have added job experience and job experience squared into the models.

Model 1 is the baseline model with national ancestry as the predictor variable and with variables for age at graduation, age at graduation squared, year of graduation, semester of graduation, year of earnings, job experience and job experience squared. Along with the variables in Model 1, I include fixed effects for education in Model 2, which is a dummy variable for each field of education. Interaction terms between national ancestry and educational qualifications, for both OECD and non-OECD descendants are included in Model 3. My main focus in the analysis is on descendants of non-OECD immigrants and I will therefore only show the results of the interaction terms of the latter in the tables.

The reported N in the tables represents the total amount of observations in each model. One observation is not one person, but a person year, and one person can be observed for more than one year. The total amount of observations will therefore be the same number as the mean average job experience \* the number of persons in the analysis.

Positive estimates in a model indicate higher earnings than the reference group, and negative estimates indicate lower earnings. I will start by introducing the results from the analysis of women and will go on to present the men in the section under.

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<sup>53</sup> This effect is in part already controlled for in the variables year of graduation, but the year of earnings variables will make the control more precise, since there are persons with intermittent spells outside the labour market.

## 7.1 Women

Table 7.1 presents the separated analysis I have conducted for women. The control variables are not shown in the table. The number of observations in the models is 634,768. As we can see in the table, national ancestry is not statistically significant in Model 1 for descendants of non-OECD immigrants. For descendants of OECD immigrants, however, there is a significant difference (-0.063,  $p < 0.05$ ). This means that descendants of OECD immigrants with higher education earn 6.5 % less than native majority persons.<sup>54</sup> Job experience has a positive correlation with earnings, but as we can interpret from the square term, this positive trend has diminishing returns after a few years. The adjusted R<sup>2</sup> is 0.106, which means that the model explains 10.6 % of the variation of the dependent variable (Skog 2010: 224).

The pattern maintains itself in Model 2. After introducing fixed effects and thus controlling for educational field, the national ancestry coefficients stay the same, but the constant has had a slight increase. As in Model 1, descendants of OECD immigrants earn slightly less than the native majority and descendants of non-OECD immigrants earn slightly more, which is indicated by the small negative and positive parameters, but only the OECD parameter is statistically significant. Perhaps surprisingly, R<sup>2</sup> does not change from Model 1 to Model 2, but stays at 10.6%.

Turning to Model 3, we see that national ancestry still has no significant effect on earnings for descendants of non-OECD immigrants. The parameter compares descendants of immigrants with native majority persons with degrees that are not Business, Engineer, Nursing or Medicine. The negative parameter for descendants of OECD immigrants increase slightly from Model 2 to Model 3. Between native majority persons, the education you have matters. The reference category the education dummies are compared to is a constructed mean average made up from all the other educational fields not included in the model. Nursing and Medicine graduates have lower earnings compared to this average, albeit very small ones, while Business and Engineer graduates have no significant earnings gap from this reference category.

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<sup>54</sup> The equation to transform the coefficients to percentage is  $100 * (e^x - 1)$ . In low parameters, the percentage is close to the parameter value (Skog 2010).

Table 7.1: Linear regression models of log earnings for descendants of immigrants: Women.

Model	1	2	3
<b>National ancestry</b>			
Majority population	ref. category	ref. category	ref. category
Non-OECD	0.024 (ns) 0.014	0.024 (ns) 0.014	0.004 (ns) 0.017
OECD	-0.063* 0.026	-0.063* 0.026	-0.070* 0.030
<b>Education</b>			
BA Engineer			-0.011 (ns) 0.007
BA Business			-0.005 (ns) 0.004
Nursing			-0.008** 0.002
Medicine			-0.028** 0.009
<b>Interaction terms</b>			
BA Engineer x non-OECD			-0.158** 0.056
BA Business x non-OECD			-0.117** 0.042
Nursing x non-OECD			0.132* 0.057
Medicine x non-OECD			0.002 (ns) 0.051
<b>Job experience</b>			
Experience	0.400*** 0.002	0.399*** 0.000	0.400*** 0.002
Experience^2	-0.008*** -0.000	-0.008*** 0.000	-0.008*** 0.000
Constant	6.708	6.715	6.719
R <sub>2</sub>	0.108	0.108	0.108
N (Observations)	634, 768	634,768	634,768

Notes: ns p > 0.05, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001, two-tailed tests. The control variables semester, year of earnings, year of graduation and age at graduation are included in the models but not shown in the table. Fixed effects for education are used in Model 2. Also, interaction terms for descendants of OECD immigrants and education are included in the model, but not shown in the table. The two significant results are Business (-0.227, p < 0.01) and Medicine (0.272, p < 0.05).

Table 7.2: Linear regression models of log earnings for descendants of immigrants: Men.

Model	1	2	3
<b>National ancestry</b>			
Majority population	ref. category	ref. category	ref. category
Non-OECD	0.000 (ns) 0.016	0.000 (ns) 0.016	-0.047* 0.022
OECD	0.070* 0.028	0.067* 0.028	-0.030 (ns) 0.033
<b>Education</b>			
BA Engineer			-0.001 (ns) 0.004
BA Business			0.002 (ns) 0.004
Nursing			0.012 (ns) 0.007
Medicine			-0.007 (ns) 0.010
<b>Interaction terms</b>			
BA Engineer x non-OECD			0.139** 0.044
BA Business x non-OECD			0.102* 0.044
Nursing x non-OECD			0.043 (ns) 0.123
Medicine x non-OECD			0.050 (ns) 0.055
<b>Job experience</b>			
Experience	0.343*** 0.003	0.343*** 0.003	0.343*** 0.003
Experience^2	-0.008*** 0.000	-0.008*** 0.000	-0.008*** 0.000
Constant	6.445	6.918	6.435
R <sub>2</sub>	0.092	0.092	0.092
N (Observations)	402,401	402,401	402,401

**Notes:** ns p > 0.05, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001, two-tailed tests. The control variables semester, year of earnings, year of graduation and age at graduation are included in the models but not shown in the table. Fixed effects for education are included in Model 2. Also, interaction terms for descendants of OECD immigrants and education are included in the model, but not shown in the table. The only significant OECD interaction term is Medicine (0.401, p < 0.01).

Looking at the interaction terms, we see that for graduates of Engineer and Business, descendants of non-OECD immigrants earn less than their native majority peers. While holding job experience constant, we can see that within the group of Engineer graduates, descendants of non-OECD immigrants earn 17.1 % ( $p < 0.01$ ) less, and within the group of Business graduates, they earn 12.4 % ( $p < 0.01$ ) less. For Nursing graduates, however, female descendants of immigrants earn 14.1 % more than native majority persons ( $p < 0.05$ ). The parameter for Medicine is very low and not statistically significant (0.002,  $p > 0.05$ ).

The R-squared figures are somewhat low in all these models. The semi-low figures are probably due to the sample specification of the thesis: the data set is selected, including only individuals with higher education.

## 7.2 Men

The separated analysis done for men is presented in Table 7.2. The number of observations in the models is 402,401. Model 1 shows a significant positive parameter for descendants of OECD immigrants (0.070,  $p < 0.05$ ). The parameter means that male descendants of OECD immigrants earn 7.2 % more than native majority men with higher education. For descendants of non-OECD immigrants, there are no statistically significant earnings difference (0.000,  $p > 0.05$ ). The adjusted  $R^2$  is 0.092, which means that the model can explain 9.2 % of the variance of the dependent variable.

After introducing fixed effects of education in Model 2, there is still no significant earnings difference between the native majority and the descendants of non-OECD immigrants. The coefficient for descendants of OECD immigrants, however, is positive and statistically significant (0.067,  $p < 0.05$ ). According to the adjusted  $R^2$ , the model explains the same amount of the earnings variance as Model 1, 9.2 %.

Looking at Model 3, we can see that there has been a role change for the two foreign ancestry groups. In this model, descendants of non-OECD immigrants have a small negative parameter (-0.047,  $p < 0.05$ ), while the parameter for descendants of OECD immigrants are not statistically significant. These parameters measure the earnings difference between native majority men with a higher education degree outside the realm of Business, Nursing, Engineer and Medicine. For the education variables, only Business and Engineer graduates have significantly different earnings from the rest of the educations not included in the model. They earn respectively 14.9 % ( $p < 0.01$ ) and 10.7% ( $p < 0.05$ ) more. As the other models in the table, Model 3 is reported to explain about 9% of the variance of the earnings.

Thus, again we note that the R-squared figures are low in all these models, which we expect probably due to the sample specifications of this thesis: the data set is selected, including only individuals with higher education.

### 7.3 Summary

Above, I have presented the main content of the two tables of the second analysis. I will in this section recapitulate and discuss some of the findings. I will discuss the findings further in Chapter 8. Chapter 7 has been an attempt to answer the second research question: If employed, do descendants of immigrants with higher education experience equal earnings as majority peers with the same educational qualifications and work experience?

This chapter has investigated differences in earnings between national ancestry groups. The main pattern is that male descendants of immigrants earn more than their male native majority peers. This is true for descendants of OECD immigrants in Model 1 and Model 2, and it is true for descendants of non-OECD immigrants within Business and Engineering. The differences are not large, ranging between 7% and 15%

For women, however, the pattern is of foreign ancestry disadvantage. Interestingly, the pattern is almost mirror image of the results of the men. Female descendants of OECD immigrants earn less than native majority women, although the differences are very small, and female descendants of non-OECD immigrants have very similar earnings to the native majority group. However, among Business and Engineering graduates, the difference between the native majority and descendants of non-OECD immigrants are statistically significant. Female descendants of non-OECD immigrants earn 17.1% and 12.4 % lower earnings than native majority women.

Thus, interpreting the results broadly, they do not give support to Hypothesis 4: *The earnings are lower for descendants of immigrants than for the native majority with similar education and job experience.* The hypothesis is derived from discrimination theory and social network theory. However, the pattern is complex, and are mostly divided along gender. For men, the broad picture is that they earn more than their native majority peers, while for women, the pattern is the opposite. The results give thus not support to Hypothesis 2: *The earnings are the same for descendants of immigrants as for the majority population with similar education and job experience.* This null hypothesis, indicating that national ancestry has no affect on earnings, is derived from human capital theory.

I will in Chapter 8 discuss the findings in Chapter 6 and Chapter 7 while considering the previous research on descendants of immigrants and the theoretical perspectives discussed in Chapter 3.

## 8

### Discussion

The labour market opportunities of descendants of immigrants are a crucial test of the long-term structural integration for ethnic minorities in Norway (Hermansen 2013). I have in this thesis investigated the labour market outcomes among descendants of immigrants with higher education in Norway. Norwegians with either two Norwegian born parents or two foreign born parents are included in the analyses, and the latter group are then divided into the two categories OECD and non-OECD. The relative small sample sizes have made this categorization necessary. The thesis has analysed the labour market participation of these groups and their earnings after gaining employment, and subsequently compared their careers to the careers of native majority persons.

The analysed cohorts are born between 1965 and 1989 and are observed between 2000 and 2010. The thesis has answered two interrelated research questions that are meant to provide insight into the labour market integration of descendants of immigrants in Norway.

The effects and non-effects I have found, for example of national ancestry, are average group effects. Being average group effects means that the influence of the variables



can vary considerably across individuals, but that the individuals as a group are affected in one, or neither, direction compared to a reference category.

I will in this chapter summarize the main findings from the analyses and discuss them drawing on the theoretic perspectives and former research presented earlier.

## **8.1 Bottleneck into employment?**

The analyses of the transition period from graduation to employment are presented in Chapter 6. I will in this section discuss some of the results. The analyses in Chapter 6 were a combined strategy to answer research question 1: *Do descendants of immigrants with higher education have a lower probability of getting employed the year after graduation compared to the native majority?* An important part of the analytic strategy has been to compare similar groups within the national ancestry groups. The variables field of education, age, gender, year and semester of graduation have been included in the models to achieve this similarity.

The analyses in Chapter 6 found statistically significant differences between the national ancestry groups in employment probabilities. However, statistically significant differences should not necessarily be interpreted as substantial differences (Ziliak and McCloskey 1996), nor is statistical insignificance necessarily valueless.

In Chapter 3, I presented two opposing hypotheses stemming from human capital theory and discrimination theory and social network theory:

H1: The probability to get employed the year after graduation is the same for descendants of immigrants as for the majority population with similar education.

H3: The probability to get employed the year after graduation is lower for descendants of immigrants than for the native majority with similar education.

Model 1 showed that there were statistically significant differences between the national ancestry groups. After introducing fixed effects for education in Model 2, the significant difference was maintained for all groups, except male descendants of OECD immigrants. Thus, women and men with parents of a non-OECD origin have a lower probability of being employed the year after graduation compared to native majority persons with similar education. In the third model, I added interaction terms between national ancestry and education. However, for both gender, neither of these interaction variables were statistically significant.

The first striking pattern of the employment tables is the consistency of the negative results. Apart from male descendants of OECD immigrants, all groups have lower probabilities of being employed the year after graduation across the models. The parameters for male descendants of OECD immigrants are consistently negative as well, but not statistically significant.

The second striking pattern in the analyses are the relatively large negative probability gaps for descendants of OECD immigrants. In many of the models, they are even larger than for descendants of non-OECD immigrants, contradicting intuition. However, this pattern is mainly prevailing for women.

The results from the analyses in Chapter 6 are generally in line with previous research on descendants of immigrants. Previous research has found that entrance to employment is a bottleneck for descendants of immigrants. Studies done in other European and OECD countries have documented a pattern of less labour market participation for descendants of immigrants compared to the respective native majority populations (e.g. Algan et al. 2010; Heath, Rethon and Kilpi 2008; Ours and Veenman 2004). Also, other Scandinavian countries have reported a longer transition period from graduation to employment among descendants of immigrants (Hällsten and Szulkin 2009; Nordin and Rooth 2009; Behrenz, Hammarstedt and Månsson 2007; Rooth and Ekberg 2003; Nielsen et al. 2003). Finally, Norwegian studies have found differential employment probabilities among descendants of immigrants the year after graduation across several education levels (Hermansen 2013; Drange 2009; Evensen 2009; Brekke 2007). The results of this study corroborate this body of research, finding that descendants of immigrants less often get employed the year after graduation compared to their majority peers with similar education.

I have tested whether the result holds with different thresholds of employments and have found no pattern changing difference in the results. The pattern was maintained in all models for both women and men when I tested the models with a new dependent variable. First, I examined whether the results were different if the threshold of employment was set to only 30+ hours agreed weekly working time, without any earnings qualification. Second, I examined whether the results changed if the threshold was set to 30 hours agreed weekly working time and annual earnings of 3 BA. I found that the national ancestry affect generally decreased with a higher threshold (see Appendix B1, B2, C1 and C2).

One possible explanation for the employment gap is discrimination as described in Chapter 3. The discrimination could be both preference-based and statistical. The latter type happens when applicants with foreign sounding names are treated differently than persons with Norwegian sounding names, as indicated by the randomized field experiment by Midtbøen and Rogstad (2012).

Statistical discrimination stems from uncertainty of the applicant's productivity potential (Phelps 1972), and employers are therefore apt to be influenced by stereotypes in the decision making. One such stereotype could be that persons with a foreign sounding name are less competent in the Norwegian language, as found in Knechtel (2012). Since the persons in the data set are young adults from 20 to 35 years old, just coming out of higher education, there may be reasons to suspect that statistical discrimination is more likely to occur than for older and more experienced applicants (Wiborg 2006).

A second explanation could be that uneven access to job-relevant social networks cause different job outcomes. The use of social networks to enter the labour market has been documented in Norway, also among higher education graduates (Try 2005; Try 2002; Hansen 1997). The fact that all persons in my data set are born and educated in Norway may indicate that the between-group difference in access to networks is not large, and comparably smaller than the parent generation. A smaller parental social network may, however, affect the results.

The data set and the methodology in the study are not fit to conclude whether and to which extent discrimination and social network processes affect employment patterns. However, when complementing the findings with results from previous studies that use other methodologies (Midtbøen and Rogstad 2012; Blom and Henriksen 2007; Rogstad 2006), it seems likely that discrimination functions partly as a cause to between-group employment difference. As for unequal access to job-relevant social networks, the disparity could derive from immigrant residency patterns or the tendency of social networks to be homogeneous.

In summary, the analyses in Chapter 6 show that descendants of immigrants had a lower probability to get employed the year after graduation compared to the native majority population with similar qualifications. It is important to see this finding in context with the earnings analyses. Separated earnings analyses might bias the results because of selection effects. Furthermore, to exclusively look at the employment probability pattern after graduation is unfortunate. To establish labour market assimilation, it is essential to consider the careers of descendants of immigrants as well.

## **8.2 Low earnings after employment?**

The earnings analyses are presented in Chapter 7. The analyses answered research question number 2: *If employed, do descendants of immigrants with higher education experience equal earnings as majority peers with the same educational qualifications and work experience?*

I presented two hypotheses in Chapter 3 regarding earnings. The null hypothesis is based on the theory of human capital, and the measurable effect hypothesis is derived from the theories of discrimination and social networks.

H2: The earnings are the same for descendants of immigrants as for the majority population with similar education and job experience.

H4: The earnings are lower for descendants of immigrants than for the native majority with similar education and job experience.

The analyses found effects of national ancestry on earnings when comparing persons with in the labour market, for both men and women. This finding contradicts H2, which predicted that the earnings are similar for descendants of immigrants and the native majority population. When human capital factors such as education and job experience are included in the analytical models, national ancestry has in several of the models a significant effect on earnings.

The results show a bipolar earnings pattern for men and women. For women, there are generally no earnings disadvantage for descendants of non-OECD immigrants. However, within the groups of Business and Engineer graduates, I found significant negative gaps compared to native majority women. For Engineer graduates, this gap was 17.1% and for Business graduates it was 12.4%. Furthermore, I found small, but significant, lower earnings for female descendants of OECD immigrants compared to majority women in all models. The disadvantage is particularly pronounced within the group of Business graduates, where females descendants of immigrants earn 31% less than majority women. For Medicine graduates, however, they earned 31.2% more than the reference group.

Thus, the female results lend little support to Hypothesis 4. There are no systematic disadvantage for woman with non-OECD parents, while the observed disadvantages for women of OECD parents are small.

As with women, I generally found no earnings disparity between descendants of non-OECD immigrants and native majority person. However, contrary to the female results, I found that within Engineer and Business, male descendants of non-OECD immigrants have a substantial earnings advantage compared to native majority men. Descendants of non-OECD immigrants graduating from Business and Engineer programs earn respectively 14.9% and 10.7% more than their native majority peers. For male descendants of OCED immigrants, I generally found small earnings

advantages compared to the native majority. The earnings advantage was especially pronounced among Medicine graduates.

Thus, for men, the results give little support to Hypothesis 4. Indeed, within some educational fields the pattern is the opposite.

As discussed in Chapter 3, unequal access to job-relevant social networks can function as a generator of higher earnings. More information about job openings can create additional opportunities to move where the job pays the most. Discrimination could also affect earnings within the firm or between firms if fewer will hire a minority person. These mechanisms, however, do not create systematic earnings gaps between descendants of immigrants and native majority persons in the analyses. As a consequence, while there may be discrimination effects or social network effects influencing the probability to gain employment, these mechanisms do not appear to influence overall earnings within the labour market. It is important to note again that this analytical design is not the best to analyse specific labour market mechanisms, especially those I do not have direct information about (such as social networks and discrimination). And as suggested by a relative low adjusted R-squared score, there is much unexplained variance in the dependent variable (Skog 2010: 265).

The earnings analyses complement the scarce research on Norwegian-born minority career development. This study does not directly generalize to previous research, both because of the analytical design and because this study uses recent data that was not available earlier. The results are consistent with some of the earlier research, and diverge slightly from other research. Research on occupational attainment for descendants of immigrants in the Norwegian labour market has found no gap to the majority (Hermansen 2013). On the other hand, earlier studies have found small, but systematic earnings differences between children of immigrants and the natives (Drange 2009; Evensen 2008; Brekke 2007). My study indicate that there are no pervasive disadvantages for descendants of immigrants within the labour market. This pattern is especially clear for men, whereas the conclusion is not as clear for women. Thus, combining the results of my study with earlier occupation research, it seems that after gaining employment male descendants of immigrants achieve earnings and occupational status on par with their native majority peers.

The results in Chapter 7 are also interesting in a comparative perspective with immigration wage research. Barth, Bratsberg and Raaum (2011) found that immigrants with long residency have substantially higher earnings than immigrants with short residency. Furthermore, a large portion of the immigrant-majority earnings gap was found to be caused by firm distribution. "On average", they write, "immigrants work in low-paying firms." They found that a big part of the earnings gap,

over 40%, comes not from different monetary returns within similar firms, but from the type of firms immigrants tend to work in. The lack of earnings gaps between descendants of immigrants and the native majority suggests that distribution in low and high-paying firms does not greatly affect the groups I have studied unevenly. Thus, it may be that descendants of immigrants do not follow the low-paying firm distribution pattern of immigrants. The results further suggests that descendants with higher education and employment are economically assimilated in the Norwegian labour market.

The studies conducted in European and OECD countries suggest two main categories of career development outcomes after employment is secured; the countries with no disadvantage for descendants of immigrants groups: Australia, Canada, Great Britain, Sweden and USA (see Algan et. al. 2010; Nordin and Rooth 2009; Inglis and Model 2007; Yu and Heath 2007; Cheung and Heath 2007; Jonsson 2007; Model and Fisher 2007), and the countries with some disadvantage: Belgium, France, Germany and Israel (see Algan et. al 2010; Phalet 2007; Kalter and Granato 2007; Shavit, Lewin-Epstein and Adler 2007). The results in this study find that in Norway falls in the former category for persons with higher education.

It is important, however, to note that the earnings analyses are conducted on the selected group of persons who managed to secure employment in the first place. The employment analyses in Chapter 6 found that descendants of immigrants have lower employment propensity than native majority persons, and this could bias the results. The lower propensity could cause an interpretation problem. To illustrate; if only the best qualified and productive persons of foreign ancestries are employed, while native majority persons of all qualification and productivity levels are employed, it is likely that within the selected group there will be created a positive correlation between foreign ancestry and productivity, similarly to the discussion in Section 4.5. If so, we would expect the descendants of immigrants who achieved employment to have higher returns than the less qualified and productive native majority persons. Whether this selection causes biased results is an empirical question that must be answered with more detailed data, and cannot be assumed. However, since my threshold in the earnings analysis is set so low (only being registered with earnings), there may be that this selection effect is weak. Furthermore, even though descendants of immigrants have lower employment probabilities the year after employment, it is not necessarily the most productive and best qualified graduates that get employed.

### 8.3 Does major matter?

Between-group differences in educational choices could have a large impact on labour market outcomes. To assess whether descendants of immigrants gain similar labour market returns as native majority persons, it is crucial to focus on within-major disparity. This has also been argued for gender inequality research (Morgan 2008). In Norway, descendants of immigrants are underrepresented in humanity degrees and some social sciences, while they are overrepresented in fields like science, health professions, business and commerce (Schou 2009; Henriksen and Østby 2007). Furthermore, survey studies suggests that the type of education diploma affects the probability to get employed 6 months after graduation (Arnesen, Støren and Wiers-Jenssen 2012; Støren and Arnesen 2011; Arnesen 2010). An interesting question is thus whether this pattern can be found in comprehensive register data.

Model 2 in Chapter 6 and Chapter 7 includes fixed effects for education and Model 3 includes interaction terms that measure the outcomes of descendants of immigrants compared to native majority persons within each field of education. The inclusion of fixed effects and the interaction terms are strategies to compare the within-field employment and earnings differentials and provide the opportunity to investigate in which field the outcome gap is the largest.

By including fixed effects in Table 6.1 and Table 6.2, the employment probability gap between native majority persons and OECD descendants is reduced, while the employment gap for non-OECD descendants increases. The interpretation of these changes are, however, difficult due to the degree of unobserved heterogeneity in the models (Mood 2008: 67). Nevertheless, group overrepresentation within educations of high demand in the labour market are likely to affect the average probability of gaining employment.

On the other hand, the interaction terms in Table 6.1 and Table 6.2 showed no statistically significant effect of national ancestry within the educational fields included. Neither Engineer, Business, Nursing nor Medicine graduates have a significant different employment probability between descendants of immigrants and native majority persons. However, these results must be interpreted with the small group sizes in mind. Because the standard errors of the parameters are large, significant results will only occur with very large parameters.

Turning to earnings, the fixed effects of education field did next to nothing to the national ancestry parameters. The interaction terms, however, reveal some interesting results. As documented above, I found disparate earnings outcomes within certain educations, while not in others. Business and Engineer are fields where the between-groups difference is especially salient, for both men and women. In contrast to these fields, there was no statistically significant difference

found between descendants of non-OECD immigrants and native majority persons for Medicine graduates. For male and female descendants of OECD immigrants, however, there seem to be an earnings premium. For female Nursing graduates, I found an earnings advantage for descendants of non-OECD immigrants. I will come back to the results of the Engineer and Business graduates in the next section.

The main pattern of the earnings analyses is that of earnings integration for descendants of immigrants with higher education in Norway across educational fields. After attaining higher education and getting employed, there are no systematic difference between descendants of immigrants and native majority persons across educational fields.

#### **8.4: Does gender matter?**

As discussed above, I have found interesting diverging national ancestry effects within the separated gender analyses. One question that I will raise is: Is the labour market assimilation process for men, but not for women? The employment probability pattern is striking. Looking at the descendants of OECD immigrants group, we see that there exists a relatively large negative employment gap for women across models, but none for men. A similar pattern is apparent in the earnings analyses. While women in this group have consistent, albeit small, negative gaps across models, men are found to have small earnings advantages.

Another conspicuous piece of this pattern is found within the descendants of non-OECD immigrants group. Men graduating from Engineer and Business educations have considerable higher returns from their educations than native majority men, whereas women graduating in the same fields have substantial lower returns to their educations compared to native majority women.

Furthermore, female descendants of OECD immigrants with Business diplomas have lower earnings than majority women with similar education, while the corresponding male gap is not statistically significant.

Although not being wholly consistent, the pattern found in this thesis suggests that male descendants of immigrants are more assimilated in the labour market than the females.

#### **8.5 Does it matter where your parents emigrated from?**

Throughout the thesis I have discussed and analysed the labour market outcomes of descendants of both OECD and non-OECD immigrants compared to native majority persons. The main focus has been the latter group, but an interesting pattern has developed in the analyses. Contrary to my expectations, most models in Chapter 6 revealed a larger negative gap between descendants of



OECD immigrants and native majority persons, than between descendants of non-OECD immigrants and native majority persons.

This pattern applies especially for women. For women, of the three groups, descendants of OECD immigrants have the lowest probability of being employed in Model 1, Model 2 and Model 3 (in Table 6.1), while male descendants of OECD immigrants have the lowest probability of being employed in Model 1 in Table 6.2, but not in Model 2 and Model 3. Thus, for men, there is a larger gross between group difference for descendants of OECD immigrants, while there is a larger net between-group difference for descendants of non-OECD immigrants (i.e. after controlling for education).

It is surprising that many of the models showed lower earnings for descendants of OECD immigrants. As presented in Chapter 5, a vast majority of the OECD group consists of persons with parents emigrating other European countries. Furthermore, nearly half of the group are of either Swedish, Danish, Dutch or British ancestry. One would think that these groups would blend effortlessly into the Norwegian society. Thus, these results may function as a sign of unobserved characteristics in the analyses.

## **8.6 Future research**

Descendants of immigrants in Norway are still a young demography. As time passes, still more Norwegian-born persons with foreign ancestry will move into the labour market. This study and the studies that precede it have conducted analyses of the early career outcomes of the first descendants of immigrants to enter the labour market. These studies may be good predictions of the performance of descendants of immigrants in the future, but since labour market participation and success are such critical integration goals, it is important to continue to study these outcomes. We may find that because of labour market change and as new national ancestry groups move into the labour market, different outcomes could occur.

I will in this section point to some areas which requires further research.

First, it is of continued interest how descendants of immigrants do compared to native majority persons within each educational field. This study has documented the importance of using narrow measurements of education. When the cohorts grow larger, it will be possible to look at different educations from those I have analysed and even more specific categories as well. A problem with previous research has been the wide educational categories applied in the models.

Second, a next step is to put psychological components into the models, like cognitive abilities and psychological traits. Swedish studies have conducted earnings analyses with these

types of data and have found substantial explanatory power on earnings (Nordin and Rooth 2009; Björklund, Jäntti and Solon 2008). Freese (2008) contends that to understand how important life outcomes are determined, we require a greater appreciation for embodied variation, which is partly genetically influenced. For example, by using these previously unobserved characteristics, we could test for spuriousness in the relationship between education and labour market outcomes. Especially, these variables could improve our understanding of why people react differently to similar social conditions, which in turn could enhance the model's predictability. Moreover, the implementation of genetic or psychological variables to social analysis contributes to the empirically focused dialogue between sociologists and sociobiologists (Freese and Powell 1999).

Third, it could prove useful to include more labour market data. For example, one could explore how higher unemployment generally or in specific segments of the labour market influence minority outcomes. Changes in labour market conditions could have disparate effects on native majority persons and minority persons (Bratsberg, Barth and Raaum 2006). However, individual labour market data - like which industry or sector the individual works in - might be problematic because of possible exclusion processes in some segments of the labour market (Darity and Mason 1998). The consequence of including these data could be that the results mask discrimination processes.

## **8.7 Conclusion: Are descendants of immigrants integrated in the Norwegian labour market?**

Do the results of this study suggest labour market integration of descendants of immigrants with higher education, or labour market exclusion? As discussed, there appears to be a functioning bottleneck into the labour market for descendants of immigrants. Apart from male descendants of OECD immigrants, these differences are significant, even after controlling for variables such as education, age, gender and year and semester of graduation. After gaining employment, however, the further career pattern is more complex. Contrary to discrimination theory, male descendants of immigrants tend to have higher earnings than native majority persons. On the other hand, female descendants of OECD immigrants are mainly at an earnings disadvantage, whereas the earnings of female descendants of non-OECD immigrants are generally on par with native majority women.

Between group-differences in earnings vary across educational fields, but the analyses do not suggest a systematic inequality across the labour market. The results give thus support to the economical assimilation hypothesis (as defined in Nielsen, Roshold, Smith and Husted 2004).

Although there are many mechanisms that could affect the results - among them uneven access to social networks and unobserved characteristics - previous research suggests that a valid interpretation of the results is, at least in part, discrimination. The findings of Knechtel (2012) and Midtbøen and Rogstad (2012) suggest that discrimination occurs in the hiring process. As discussed in Section 1.4, however, this discrimination does not necessarily affect my results. Furthermore, discrimination theory would likely predict larger disadvantages for descendants of non-OECD immigrants than for descendants of OECD immigrants. But evidence for this pattern is scarce.

One of the main results of this thesis is that the largest disadvantage for descendants of immigrants occurs in the entrance to the labour market. After employment, the labour market returns are generally on par with the majority population. Thus, the study corroborates earlier findings in Norway (Hermansen 2013). Within the international literature, the Norwegian pattern resembles the findings in Great Britain and Sweden, as well as traditional immigration countries like Australia, Canada and USA. In these countries, the labour market disadvantage for descendants of immigrants is mainly in the entrance to the labour market, but when successfully employed, they receive similar returns as their native majority peers.

Another important finding is the gender differences in both sets of analyses. For example, for descendants of OECD immigrants, men have no significant disadvantage in entering the labour market, whereas the disadvantage is relatively large for female descendants of OECD immigrants. This pattern repeats itself in the earnings analyses. Female descendants of OECD immigrants have slightly lower returns to their education compared to native majority women. Males, on the other hand, have slight advantages compared to native majority men. Moreover, within the educational fields Business and Engineer, male descendants of non-OECD immigrants have substantially higher earnings than majority graduates, while the opposite is the case for female descendants of non-OECD immigrants.

The results of this thesis paint a somewhat promising picture of the future of integrating the descendants of immigrants population in the Norwegian labour market. There are some disadvantages in gaining access to employment, but when employment is secured there are no apparent systematic disadvantages observed.



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All references in this thesis are reported.

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# Appendix

## A1:

*A1: Pure OECD and non-OECD categories. Binary logit models of employment for descendants of immigrants: Women.*

Model	1	2	3
<b>National ancestry</b>			
Majority population	ref. category	ref. category	ref. category
Non-OECD	-0.142* 0.067	-0.268*** 0.069	-0.229** 0.084
OECD	-0.423* 0.114	-0.353** 0.117	-0.536*** 0.132
<b>Education</b>			
BA Engineer			0.162*** 0.040
BA Business			0.292*** 0.023
Nursing			-0.477*** 0.015
Medicine			0.266*** 0.0456
<b>Interaction terms</b>			
BA Engineer x non-OECD			0.206 (ns) 0.304
BA Business x non-OECD			-0.206 (ns) 0.213
Nursing x non-OECD			0.374 (ns) 0.281
Medicine x non-OECD			-0.217 (ns) 0.209
-2LL (df)	-85,194.215 (4)	-82,602.528 (5)	-84,482.312 (4)
-2LL Change (Sig.)			
Pseudo R <sub>2</sub>	0.029	0.058	0.037
N	126,606	126,604	126,606

Notes: ns  $p > 0.05$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . The control variables semester, year of graduation, age at graduation and age at graduation squared are included in the models but not shown in the table. Fixed effects for education are used in Model 2. Also, interaction terms for descendants of OECD immigrants and education are included in the model, but not shown in the table. Neither is statistically significant.

## A2:

Table A2: Pure OECD and non-OECD categories: Binary logit models of employment for descendants of immigrants: Men.

Model	1	2	3
<b>National ancestry</b>			
Majority population	ref. category	ref. category	ref. category
Non-OECD	-0.185*	-0.209**	0.247*
	0.078	0.080	0.109
OECD	-0.218 (ns)	-0.205 (ns)	-0.194 (ns)
	0.131	0.134	0.157
<b>Education</b>			
BA Engineer			0.187***
			0.022
BA Business			0.107***
			0.023
Nursing			-0.308***
			0.039
Medicine			-0.059 (ns)
			0.053
<b>Interaction terms</b>			
BA Engineer x non-OECD			0.187 (ns)
			0.227
BA Business x non-OECD			0.320 (ns)
			0.216
Nursing x non-OECD			0.785 (ns)
			0.508
Medicine x non-OECD			-0.333 (ns)
			0.254
-2LL (df)	-51,666.042 (4)	-50,438.73 (5)	-51,578.852 (4)
-2LL Change (Sig.)			
Pseudo R <sub>2</sub>	0.030	0.053	0.032
N	78,231	78,220	78,231

Notes: ns  $p > 0.05$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . The control variables semester, year of graduation, age at graduation and age at graduation squared are included in the models but not shown in the table. Fixed effects for education are used in Model 2. Also, interaction terms for descendants of OECD immigrants and education are included in the model, but not shown in the table. Neither is statistically significant.

## B1:

*B1: Employment threshold: 30 hours of agreed weekly working time. Binary logit models of employment for descendants of immigrants: Women.*

Model	1	2	3
<b>National ancestry</b>			
Majority population	ref. category	ref. category	ref. category
Non-OECD	-0.191* 0.065	-0.379*** 0.069	-0.294** 0.079
OECD	-0.428** 0.127	-0.405** 0.135	-0.571*** 0.142
<b>Education</b>			
BA Engineer			0.222*** 0.043
BA Business			0.513*** 0.026
Nursing			-0.490*** 0.015
Medicine			0.620*** 0.053
<b>Interaction terms</b>			
BA Engineer x non-OECD			0.040 (ns) 0.310
BA Business x non-OECD			-0.389 (ns) 0.215
Nursing x non-OECD			0.353 (ns) 0.275
Medicine x non-OECD			-0.301 (ns) 0.221
-2LL (df)	-80,031.111 (4)	-75,188.948 (5)	-79,070.115 (4)
-2LL Change (Sig.)			
Pseudo R <sub>2</sub>	0.027	0.086	0.039
N	126,606	126,604	126,606

Notes: ns  $p > 0.05$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . The control variables semester, year of graduation, age at graduation and age at graduation squared are included in the models but not shown in the table. Fixed effects for education are used in Model 2. Also, interaction terms for descendants of OECD immigrants and education are included in the model, but not shown in the table. Neither is statistically significant.

## B2:

*B2: Employment threshold: 30 hours of agreed weekly working time. Binary logit models of employment for descendants of immigrants: Men.*

Model	1	2	3
<b>National ancestry</b>			
Majority population	ref. category	ref. category	ref. category
Non-OECD	-0.281*** 0.080	-0.371*** 0.084	0.240* 0.104
OECD	-0.420* 0.152	-0.411* 0.162	-0.417* 0.173
<b>Education</b>			
BA Engineer			0.356*** 0.025
BA Business			0.264*** 0.027
Nursing			-0.356*** 0.043
Medicine			-0.095 (ns) 0.063
<b>Interaction terms</b>			
BA Engineer x non-OECD			0.019 (ns) 0.242
BA Business x non-OECD			0.029 (ns) 0.226
Nursing x non-OECD			0.662 (ns) 0.550
Medicine x non-OECD			-0.551* 0.257
-2LL (df)	-42,748.434 (4)	-39,542.168 (5)	-42,567.87 (5)
-2LL Change (Sig.)			
Pseudo R <sub>2</sub>	0.037	0.109	0.041
N	78,231	78,220	78,231

ns p > 0.10, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001, two-tailed tests. The control variables semester, year of graduation and age at graduation are included in the models but not shown in the table. Also, interaction terms for descendants of OECD immigrants and education are included in the model, but not shown in the table. Neither is statistical significant.

# C1:

*C1: Employment threshold: 3 BA in annual earnings and 30 hours of agreed weekly working time. Binary logit models of employment for descendants of immigrants: Women.*

Model	1	2	3
<b>National ancestry</b>			
Majority population	ref. category	ref. category	ref. category
Non-OECD	-0.093 (ns) 0.134	-0.190* 0.068	-0.147 (ns) 0.082
OECD	-0.414** 0.134	-0.397** 0.137	-0.538*** 0.151
<b>Education</b>			
BA Engineer			0.041*** 0.043
BA Business			0.264*** 0.023
Nursing			-0.445*** 0.015
Medicine			0.210*** 0.043
<b>Interaction terms</b>			
BA Engineer x non-OECD			0.222 (ns) 0.305
BA Business x non-OECD			-0.279 (ns) 0.219
Nursing x non-OECD			0.365 (ns) 0.289
Medicine x non-OECD			-0.344 (ns) 0.211
-2LL (df)	-83,915.657 (4)	-81,922.919 (5)	-83,330.007 (4)
-2LL Change (Sig.)			
Pseudo R <sub>2</sub>	0.034	0.056	0.040
N	126,606	126,604	126,606

Notes: ns  $p > 0.05$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . The control variables semester, year of graduation, age at graduation and age at graduation squared are included in the models but not shown in the table. Fixed effects for education are used in Model 2. Also, interaction terms for descendants of OECD immigrants and education are included in the model, but not shown in the table. Neither is statistically significant.

## C2:

*C2: Employment threshold: 3 BA of annual earnings and 30 hours of agreed weekly working time. Binary logit models of employment for descendants of immigrants: Men.*

Model	1	2	3
<b>National ancestry</b>			
Majority population	ref. category	ref. category	ref. category
Non-OECD	-0.172* 0.079	-0.186* 0.080	0.243* 0.108
OECD	-0.161 (ns) 0.147	-0.152 (ns) 0.149	-0.090 (ns) 0.167
<b>Education</b>			
BA Engineer			0.144*** 0.021
BA Business			0.085*** 0.023
Nursing			-0.261*** 0.040
Medicine			-0.043 (ns) 0.052
<b>Interaction terms</b>			
BA Engineer x non-OECD			0.088 (ns) 0.236
BA Business x non-OECD			0.418 (ns) 0.216
Nursing x non-OECD			0.460 (ns) 0.501
Medicine x non-OECD			-0.147 (ns) 0.259
-2LL (df)	-52,226.634 (4)	-51,396.821 (5)	-52,168.709 (4)
-2LL Change (Sig.)			
Pseudo R <sup>2</sup>	0.034	0.049	0.035
N	78,231	78,220	78,231

ns p > 0.10, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001, two-tailed tests. The control variables semester, year of graduation and age at graduation are included in the models but not shown in the table. Also, interaction terms for descendants of OECD immigrants and education are included in the model, but not shown in the table. Neither is statistical significant.